Monroe Energy, LLC
4101 Post Road
Trainer, PA 19061
(610) 364-8000

HAND DELIVERED TO PADEP SOUTHEAST REGIONAL OFFICE

September 14, 2015

Mr. James Rebarchak
Program Manager – Bureau of Air Quality
Pennsylvania Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, PA 19401

Subject: Plan Approval Application for Ultra Low Sulfur Gasoline Project
Monroe Energy, LLC, Delaware County, Trainer Borough
Title V Operating Permit No. 23-00003

Dear Mr. Rebarchak:

Monroe Energy, LLC (Monroe Energy or Monroe) is pleased to provide the Pennsylvania Department of Environmental Protection (PADEP) with the enclosed three (3) copies of a Plan Approval Application (application) for its petroleum refinery located in Trainer, Delaware County, Pennsylvania (Trainer Refinery or Refinery). This application is being submitted to obtain authorization to make modifications at the Refinery needed to meet gasoline sulfur level requirements of U.S. EPA's Tier 3 Motor Vehicle Emission and Fuel Standards rule which was published at 79 Federal Register (Fed. Reg.) 23414 (April 28, 2014), and amended at 80 Fed. Reg. 9078 (February 19, 2015).

This application is being submitted to fulfill the Pennsylvania air quality permitting requirements for nonexempt stationary sources and provides the necessary information for PADEP review and approval of the proposed project based on Monroe's understanding and interpretation of the rules. All4 Inc. assisted Monroe with preparation of this application.

The application is organized as follows:

- Attachment A – Application Narrative, including the following:
  - *Project Description* – Provides a description of the proposed project and a facility location map.
  - *Emissions Inventory* – Provides potential air pollutant emissions estimates for the proposed project.
  - *Regulatory Applicability Analysis* – Summarizes potentially applicable Federal and Commonwealth of Pennsylvania air quality requirements applicable to the proposed project.
- Attachment B – PADEP Application Forms, including the following:

  - General Information Form (GIF).
  - Application for Plan Approval to Construct, Modify, or Reactivate an Air Contamination Source and/or Install an Air Cleaning Device Application Form (Process and Combustion Forms).
  - Addendum A and Addendum 1.
  - Compliance Review Form (CRF).
- Attachment C – Emissions Inventory Tables.
- Attachment D – Municipal Notification Letters.
- Attachment E – All4 Inc. Quality Seal.

As requested by PADEP, Monroe Energy is also providing one (1) electronic copy of this application to the U.S. Environmental Protection Agency (U.S. EPA) Region 3 Office of Permits and State Programs, via email, to Ms. Gerallyn Duke.

Monroe Energy appreciates PADEP's consideration of these matters. Should you have any questions or require additional information, please contact me at (610) 364-8528, or Mr. Matt Torell, Environmental Leader, at (610) 364-8399.

Sincerely,
MONROE ENERGY, LLC

David Chetkowski, P.E.
Air Program Lead

cc: Gerallyn Duke – U.S. EPA Region 3 (duke.gerallyn@epa.gov)
Neal Lebo – All4 Inc.

ATTACHMENT A
APPLICATION NARRATIVE

PROJECT DESCRIPTION

A brief description of the existing operations at the Trainer Refinery and a description of the proposed Ultra Low Sulfur Gasoline Project (ULSG project or project) are provided below.

EXISTING FACILITY DESCRIPTION

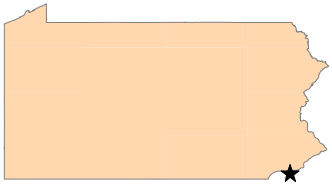
Monroe Energy owns and operates a petroleum refinery located on the Delaware River in Trainer, PA, about 10 miles southwest of the Philadelphia International Airport. The Refinery processes mainly light, sweet (low-sulfur) crude oils and primarily produces jet fuel and other transportation fuels, such as gasoline and diesel fuel. Other products include, but are not limited to, sulfur, home heating oil, residual fuel oil, and liquefied petroleum gas (e.g., propane, butane). The Refinery also buys, sells, and trades intermediate streams that can be used as feedstocks or fuel blending components. The Trainer Refinery currently operates under PADEP Title V Operating Permit (TVOP) No. 23-00003.

Figure 1 shows the location of the Trainer Refinery.

PROPOSED PROJECT DESCRIPTION

Monroe Energy proposes to purchase and relocate the low sulfur gasoline process unit from the former Sunoco, Marcus Hook Refinery to the Trainer Refinery to meet the U.S. EPA Tier 3 Motor Vehicle Emission and Fuel Standards rule (Tier 3 standards). Exxon Mobil Corporation, the process technology licenser, has reviewed Monroe's proposed feed rates and feed qualities and has verified that the unit can meet the product sulfur levels of the Tier 3 standards. The process will be referred to as the Ultra Low Sulfur Gasoline (ULSG) unit at the Trainer Refinery. Figure 2 represents the general process flow at the Trainer Refinery, and highlights the changes to the existing configuration that will result from the proposed project. Figure 3 provides a diagram of the process flow of the proposed ULSG unit.

Approximate Quadrangle Location



0 0.5 1

kilometers

Based on USGS 1:24,000 topographical map for Marcus Hook, PA.

N

Monroe Energy, LLC
Trainer Refinery
Trainer, PA

Figure 1
Facility Location Map

G:\DATA\Client Files\Monroe Energy\C380-003 General Assistance 2013\USGS\Monroe Facility Location Map.wor

CRUDE
543 CRUDE
NAPHTHA
KERO/JET
DIESEL
AGO
REDUCED CRUDE
541 VAC
VGO
RESID
542 VAC
VGO
RESID
NAPHTHA HDS
KERO/HCN HDT
D1 DIESEL HDT
LCO
ISOCRACKER
NAPHTHA STAB.
STRIPPER
STRIPPER
NAPHTHA SPLITTER
HVY. NAPHTHA
SALT DRIER
ISO REC. SPLITTER
HVY. ISOCRACKATE
REFORM.
REF. DEC4
REF. SPLITTER
REF. STRIPPER
LT NAPHTHA TO GASOLINE
C5 TO GASOLINE
LT REFORMATE
HVY REFORMATE TO GASOILNE
JET / KERO
HOME HEATING OIL
LOW SULFUR DIESEL
FUEL GAS
C3
NC4
LT. ISOCRACKATE TO GASOLINE
C3
ISO. DEC4
ISO. DEC2
ISO. DEC3
DIB
ISOSTRIPPER DEC3
NC4
ALKYLATE TO GASOLINE
FUEL GAS
IC4
ALKY
IC4
CRUDE
544 CRUDE
NAPHTHA
KERO/JET
DIESEL
AGO
REDUCED CRUDE
544 VAC
LVGO
HVGO
RESID
RESID
VGO INPORT/EXPORT
LCO
D2 DIESEL HDT
VGO
RESID
FCC
FCC MF
LCO
HCO
SLURRY
FCC ABS SYSTEM
C2
FCC DEC2
C3/C4
FCC DEC4
FCC NAPHTHA SPLITTER
LT CAT NAPHTHA TO GASOLINE
HEAVY CAT NAPHTHA TO HCN HDT
No. 6 OIL
TOTAL CAT NAPHTHA TO ULSG UNIT
Disconnected and abandoned in place.
New connection to proposed ULSG Unit.

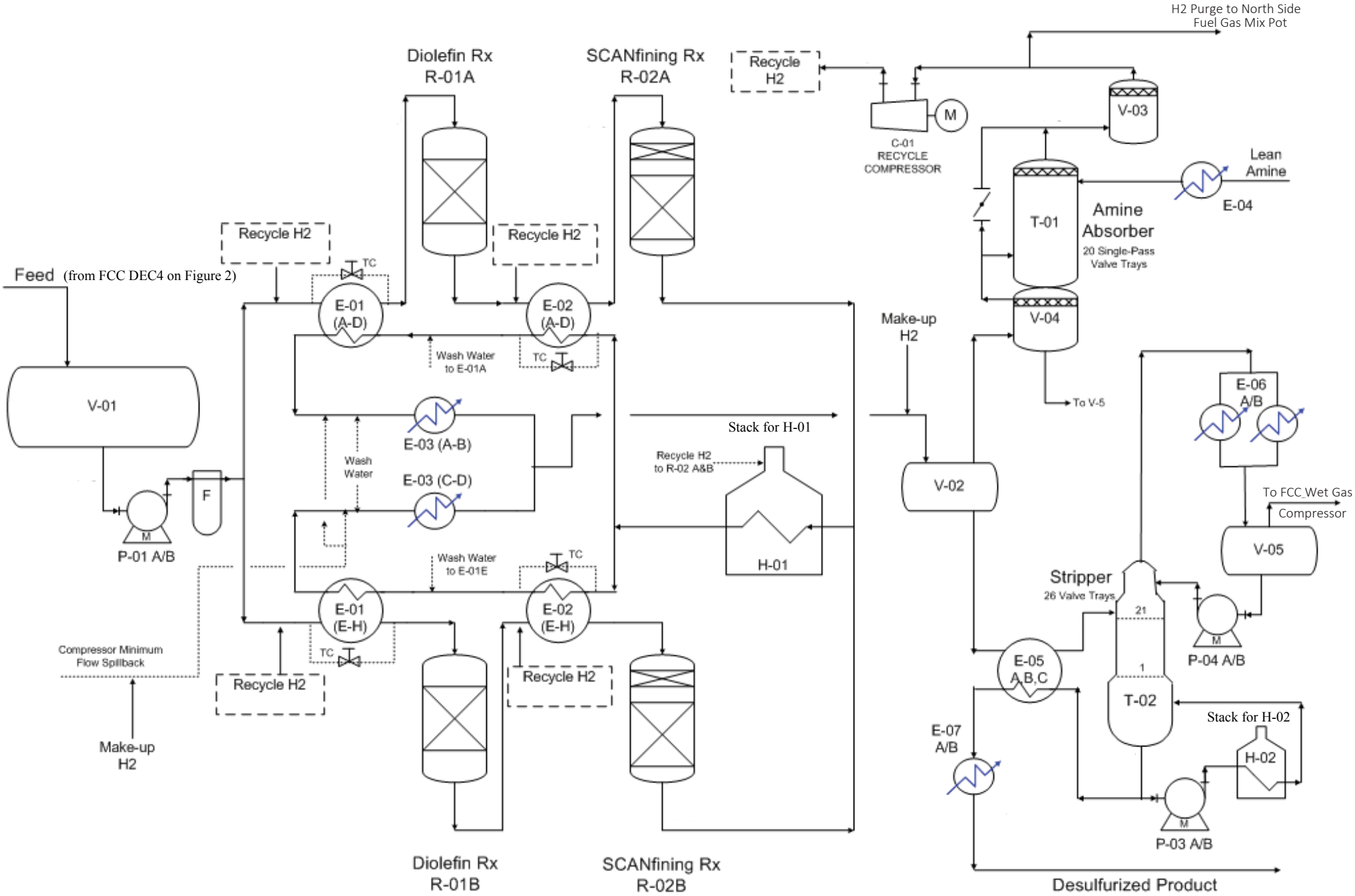
TRAINER, PENNSYLVANIA
THIS DRAWING IS PROPERTY OF
Monroe Energy
AND IS LENT WITHOUT CONSIDERATION OTHER THAN THE BORROWER'S AGREEMENT THAT IT SHALL NOT BE REPRODUCED, COPIED, LENT OR DISPOSED OF DIRECTLY OR INDIRECTLY NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SPECIFICALLY FURNISHED

Figure 2

REFINERY FLOW DIAGRAM

DRAWING	DATE	APPROVAL	DATE
DESIGN		DESIGN - DRAFTING	
DRAWN R.A. DANIELS	08/21/99	PROJ. ENGINEER	
CHECKED		OPERATING DEPT.	
DOC. RET. CODE EEF100 E+1Y/ATA			
AREA No. ALL	BASE No. MH-1026	PLOT DATE	
DRAWING NUMBER MH-1026-RFD-001	SHT. No 1	OF 1	REV. No 0

Figure 3 - Process Flow
ULTRA LOW SULFUR GASOLINE UNIT



At maximum gasoline operation, the Refinery's current configuration allows for the Fluid Catalytic Cracking (FCC) unit (Source ID 101) to nominally produce 34,000 barrels per day (BPD) of total cat naphtha. Currently the cat naphtha stream is split into a light and a heavy stream, with only the heavy cat naphtha stream being desulfurized in the Heavy Cat Naphtha (HCN) hydrotreating unit. The HCN unit also currently processes up to 8,500 BPD of straight run naphtha, however this stream to the HCN unit is not desulfurized in the reactor and is sent to the product stripper for stabilization. To meet the Tier 3 standards, a higher level of desulfurization is needed for all naphtha streams (i.e., straight run naphtha, light cat naptha, and HCN); however, the Refinery cannot meet Tier 3 standards as it is currently configured.

To attain the level of desulfurization required to meet Tier 3 standards, the Refinery proposes to install and operate the new ULSG unit. The ULSG unit will utilize two (2) refinery fuel gas-fired process heaters rated at approximately 99.6 and 44.2 MMBtu/hr. The ULSG unit will be designed for a total naphtha flow rate of 44,000 BPD, comprised of up to 34,000 BPD of total cat naphtha from the FCC unit and up to 10,000 BPD of straight run naphtha from the crude units. Shifting the processing of these streams to the proposed ULSG can result in changes to the short-term crude processing rate and the short-term processing rates of other units at the Trainer Refinery. The annual processing capacity of the refinery is dependent on many variables including, but not limited to, the properties of the crude being processed, catalyst life cycle in units throughout the Refinery, and customer product specifications, and will not be impacted by the project.

The nominal amount of straight run naphtha currently sent to the HCN unit stripper for stabilization is up to 8,500 BPD. The proposed process configuration will divert this stream to the ULSG unit at a nominal design rate of up to 10,000 BPD. Up to 1,500 BPD of excess straight run naphtha will be diverted from the Naphtha Hydrotreater (NHT) unit allowing for short-term flexibility in crude processing rates. Based on the Trainer Refinery's 2014 average crude composition, the naphtha yield was approximately 30%. Therefore, an increase in naphtha processing capability up to 1,500 BPD could allow for a short-term average increase in the overall crude processing rate of up to 5,000 BPD. In turn, the short-term average crude processing rate increase could, under

certain operating conditions, influence the short-term feed rates of several existing process units at the Refinery. Specifically, the process units that could see these short-term changes are the D1 and D2 diesel hydrotreaters (Source IDs 736 and 741, respectively), the Isocracker 1st Stage Heater (Source ID 739), the Isocracker Splitter Reboiler (Source ID 740), and the sulfur recovery unit (SRU) (Source ID 102). Following implementation of the proposed project, the existing HCN unit will be operated as either a naphtha hydrotreater or a distillate (jet) hydrotreater.

The proposed ULSG unit will require hydrogen to remove the feed sulfur. However, the existing Platformer unit (Source ID 119) that produces the Refinery's hydrogen supply is limited by the availability of heavy naphtha feed. To make hydrogen available for the ULSG unit, an estimated 4,100 BPD of light cycle oil (LCO) will be shifted away from the Isocracker to the D1 and D2 hydrotreaters. This LCO shift from the Isocracker to the D1 and D2 hydrotreater units will decrease the olefin saturation and consume less hydrogen, thereby making hydrogen available for the proposed ULSG unit. The shift will also result in a small increase in ULSD production.

The FCC unit operates to a coke burn limit and will not be able to increase feed rate as a result of the proposed project. However, under the proposed configuration, on average it will consume more residual oil to minimize the production of number 6 oil. In order to process the residual oil while remaining at the FCC unit coke burn limit, some gasoil feed will be shifted to the Isocracker, resulting in a processing rate increase of gasoil at the Isocracker. The net Isocracker feed rate is expected to decrease because more LCO will be shifted away from the Isocracker than vacuum gas oil (VGO) shifted to the Isocracker.

It is important to note that the feed shifts and resulting short-term processing rate changes described herein do not represent new modes of operation, as feed shifts such as those described above regularly occur to ensure that the Refinery produces on-specification products while maximizing profitability.

The potential increase in the short-term crude processing rate and downstream process unit rates could result in process unit heater firing rate increases. Specifically, the process unit heaters which

could see firing rate increases are the FCCU feed heater (Source ID 733), the VCD 541, 542 and 544 vacuum heaters (Source IDs 742, 743 and 746, respectively), the ACD 543 and 544 crude heaters (Source IDs 744 and 745, respectively), the Kero/HCN HTU feed heater (Source ID 735), the naphtha HDS heater (Source ID 737), and the Platformer feed heaters (Source ID 738). The projected future actual process heater firing rates are conservatively assumed to be proportional to the changes in expected short-term feed and product rate changes but are within the normal short-term operating ranges that have been observed historically. In addition to these process unit heater firing rate changes, an increase in short-term steam demand is anticipated to support Refinery operations. The steam is assumed to be produced by existing Boilers 9 and 10 (Source IDs 034 and 035 respectively). No physical modification of the boilers will be made as part of the proposed project and there will be no increase in the hourly maximum steam generating capacity of the boilers. The proposed project could also result in increased short-term product throughput rates of the Refinery's storage tanks for crude, diesel fuel, jet fuel and gasoline blending components.

Finally, the ULSG unit requires trim cooling on the reactor effluent stream and the product cooler. This cooling water demand will be provided by a proposed new cooling tower. The proposed new cooling tower water flow rate is based on the original heat exchanger design. Cooling tower water make-up will be provided by the local municipal water authority. New cooling tower blowdown will be directed to the Trainer Refinery's existing onsite Advanced Wastewater Treatment Plant (AWWTP). No air emissions increase from blowdown to the AWWTP is expected because the Refinery assumes that any trace amounts of organics present in the cooling water return as a result of heat exchanger leaks, will be stripped out by the cooling tower. This assumption conforms with the work practice standards, and reporting requirements for heat exchanger systems found in 40 CFR Part 63, Subpart CC.

There will be no physical modifications to existing air emissions sources at the Refinery as part of the proposed project. A complete list of the new and affected units from the proposed project is provided in the following Emissions Inventory section.

EMISSIONS INVENTORY

This section presents an inventory of the emissions increases associated with the proposed ULSG project. Tables referenced in this section are found in Attachment C.

The Trainer Refinery is located in an area that is classified as nonattainment with respect to the 2008 1-hour ozone and 2012 annual particulate matter (PM) less than 2.5 microns ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS). The area is either attainment, or unclassifiable, with respect to all of the other NAAQS. Since the Refinery already qualifies as a major stationary source under both of the major New Source Review (NSR) regulations, the project must be evaluated to determine if it qualifies as a major modification under the PADEP nonattainment NSR (NNSR) rules for ozone and $PM_{2.5}$, and the Federal Prevention of Significant Deterioration (PSD) rules for the other regulated NSR pollutants.

To complete the major NSR applicability assessment, an emissions inventory was developed for the project. The NSR applicability assessment includes the analysis of baseline actual emissions (BAE) rates, projected actual emission (PAE) rates, and could have accommodated (CHA) emission rates for affected units, and potential to emit (PTE) rates for new units. BAE rates are calculated for all existing emission units that are either modified or affected by the proposed project. No existing emissions units will be modified as a result of the proposed project. The affected emissions units for this project are as follows:

- FCC Unit (Source ID 101)
- FCCU Feed Heater (Source ID 733)
- Kerosene/HCN HTU Feed Heater (Source ID 735)
- Diesel HTU Heater (Source ID 736)
- D2/VGO Hydrotreater Feed Heater (Source ID 741)
- Naphtha HDS Heater (Source ID 737)
- Platformer Feed Heater (Source ID 738)
- Isocracker 1st Stage Heater (Source ID 739)
- Isocracker Splitter Reboiler (Source ID 740)
- VCD 541 VAC Heater (Source ID 742)
- VCD 542 VAC Heater (Source ID 743)
- VCD 544 VAC Heater (Source ID 746)

- ACD 543 Crude Heater (Source ID 744)
- ACD 544 Crude Heater (Source ID 745)
- Boiler 9 (Source ID 034)
- Boiler 10 (Source ID 035)
- Claus Sulfur Recovery Plant (Source ID 102)
- Main Flare (Source ID 103)
- Tank 93 (Source ID 165)
- Tank 94 (Source ID 166)
- Tank 95 (Source ID 126)
- Tank 96 (Source ID 127)
- Tank 152 (Source ID 137)
- Tank 153 (Source ID 138)
- Tank 155 (Source ID 140)
- Tank 157 (Source ID 142)
- Tank 158 (Source ID 300)
- Tank 159 (Source ID 143)
- Tank 160 (Source ID 194)
- Tank 161 (Source ID 144)
- Tank 162 (Source ID 145)
- Tank 163 (Source ID 146)
- Tank 164 (Source ID 147)
- Tank 165 (Source ID 148)
- Tank 166 (Source ID 149)
- Tank 168 (Source ID 150)
- Tank 170 (Source ID 152)
- Tank 174 (Source ID 155)
- Tank 175 (Source ID 156)
- Tank 178 (Source ID 157)
- Tank 181 (Source ID 160)
- Tank 182 (Source ID 161)
- Tank 185 (Source ID 163)
- Tank 186 (Source ID 164)

Baseline Actual Emission Rates

The major NSR rules specify that BAE rates be developed using the average rate, in tons per year (tpy), of any historic 24-consecutive month period during the 10 years prior to submission of a completed plan approval application for PSD and five (5) years for NNSR. Monthly emission

rates were developed for the Refinery operating period beginning in September 2005 through July 2015.

For the affected units, BAE for criteria pollutants, with the exception of lead, sulfur dioxide (SO_2), hydrogen sulfide (H_2S), total reduced sulfur (TRS), and greenhouse gas (GHG), are determined using historic production data and emission rates consistent with the regulatory definitions of BAE in the NNSR and PSD regulations. For the purposes of this evaluation, the PM emissions shown are representative of the filterable portion of PM only. PM less than 10 microns (PM_{10}) and $PM_{2.5}$ are representative of both the filterable portion of each respective particle size and condensable PM emissions, where data are available.

Lead emissions have been included in the BAE inventory using the emissions factor for lead from U.S. EPA *AP-42 Compilation of Air Pollutant Emissions Factors*, for lead in natural gas combustion and multiplying by the historic fuel usage of the affected units. SO_2 emissions in the BAE inventory are also determined using historic production data and have been corrected to reflect the 12-month rolling average (calculated monthly) TVOP limits for H_2S concentration in the north and south side refinery fuel gas supply [50 and 48 parts per million dry volume (ppmvd), respectively] assuming a full conversion of H_2S to SO_2. H_2S and TRS emissions are determined using historic heat input and fuel usage data and emissions factors from U.S. EPA's *Emission Estimation Protocol for Petroleum Refineries.* GHG emissions have been included in the baseline using the appropriate emissions factors listed in 40 CFR Part 98.

On June 23, 2014 the U.S. Supreme Court, in *Utility Air Regulatory Group v. EPA*, struck down portions of the GHG "Tailoring Rule," which modified the GHG major source criteria for inclusion in the PSD and Title V programs. The U.S. EPA August 19, 2015 final rulemaking officially removed the requirements that were struck down in the June 23, 2014 court decision. While the recent U.S. Supreme Court decision on GHG permitting did not remove consideration of GHG PSD permitting when the permitting project already triggers PSD permitting for one of the conventional PSD pollutants (i.e. nitrogen dioxide (NO_2), volatile organic compounds (VOC), SO_2, carbon monoxide (CO), etc.), the Supreme Court did determine that the U.S. EPA lacked the

authority to require PSD permitting solely on the basis of the GHG emission levels. This project is not otherwise subject to PSD for non-GHG pollutants, and therefore cannot be subject PSD to permitting solely for GHG emissions.

Since the Refinery is located in a nonattainment area for both the 2008 1-hour ozone and 2012 annual $PM_{2.5}$ NAAQS, the proposed project must also be assessed to determine the potential applicability of the Pennsylvania NNSR rules. The Pennsylvania NNSR rules limit the period for determining BAE to any consecutive 24-month period in the five (5) years immediately prior to the date a complete plan approval application is received by PADEP. Nitrogen oxides (NO_X) and volatile organic compounds (VOC) are precursors to the formation of ozone and must be evaluated for NNSR applicability. When evaluating NNSR for ozone significance, the baseline periods must be the same for VOC and NO_X. For $PM_{2.5}$, the precursor pollutants that require evaluation along with $PM_{2.5}$ are NO_X and SO_2. When evaluating for $PM_{2.5}$, the baseline periods for $PM_{2.5}$, SO_2 and NO_X must be the same.

Tables C-1 and C-2 summarize the BAE selected for PSD and NNSR, respectively. These tables include both the individual emissions unit BAE rates and the total project BAE rates on a pollutant-by-pollutant basis, and also identify the baseline period selected for each PSD and NNSR pollutant.

Projected Actual Emissions Rates

Tables C-3 through C-25 detail the PAE rates for emissions units that are affected by proposed project. Where available, continuous emissions monitoring system (CEMS) and stack test data were used to calculate PAE rates for each affected or modified unit. When CEMS or stack test data were not available, emissions were calculated using *AP-42 Compilation of Air Pollutant Emissions Factors* for natural gas combustion. SO_2 emissions were calculated as they were in the baseline (i.e., using the TVOP H_2S concentration limits in the refinery fuel gas assuming 100 percent conversion to SO_2). GHG emissions were calculated using the appropriate 40 CFR Part 98 emissions factors.

A plan approval application that affects the SRU was submitted to PADEP on May 18, 2015. With the exception of SO_2, the PAE rates for all other PSD pollutants for the SRU are calculated consistently with that plan approval application. However, the expected SO_2 emissions increase resulting from the modification proposed in that application have not been incorporated into this analysis. The SO_2 emission increases associated with the modification in that application were approximately 0.04 tons per year (tpy). This emission increase has been accounted for in the contemporaneous emission increases analysis, show in Table C-36 of Attachment C.

Since the future operation of the Main Flare will include the flare gas recovery unit (FGRU) that is currently nearing completion of construction, the flare will primarily only receive gases during upset conditions. The PAE rates for the Main Flare are calculated by first annualizing the average of the three (3) highest emitting months from 2013-2014 and then applying an 80% reduction to reflect the gases that will no longer be combusted in the Main Flare due to their recovery in the FGRU. As discussed previously, operations at the Refinery fluctuate on a monthly basis, making it hard to predict how both the Main Flare and tanks may be affected in the future. Monroe believes that evaluating the average of the three (3) highest emitting months, conservatively captures future fluctuations. Similarly, PAE rates for the affected tanks are calculated by annualizing the average of the three (3) highest emitting months from 2013-2014.

Potential to Emit Emissions Rates

Tables C-26 through C-30 detail the PTE rates of the new units associated with the proposed project. The new units include the two (2) new feed heaters, cooling tower, and new fugitive emissions as a result of this proposed project. PTE rates for the new units are calculated using vendor-guaranteed emissions rates, the sulfur content limit of the refinery fuel gas (50 ppmvd H_2S, annual average), *AP-42 Compilation of Air Pollutant Emissions Factors*, 40 CFR Part 98, design specifications, and engineering estimates.

The cooling tower VOC emissions were calculated using guidance developed by the Texas Commission of Environmental Quality (TCEQ), titled *Air Stripping Method (Modified El Paso*

Method) for Determination of Volatile Organic Compound Emissions from Water Sources, Sampling Procedures Manual, Appendix P: Cooling Tower Monitoring Guidance (Guidance). The annual emissions rate of 6.02 tons of VOC per year corresponds to an annual average leak rate of 21 ppmv, consistent with the El Paso Method data used in the Guidance. A measurement of 21 ppmv would be approximately one-third of the delay of repair action level specified in 40 CFR §63.654(f)(3). VOC emissions from the proposed cooling tower will be the direct result of hydrocarbons leaks from water-cooled heat exchangers associated with the ULSG unit. The frequency and extent of future leaks is unpredictable, therefore Monroe believes that this assumption represents the maximum worst-case PTE rate on an annual basis for the ULSG heat exchangers that will be serviced by the proposed new cooling tower.

VOC emissions from fugitive sources were calculated using U.S. EPA's *Protocol for Equipment Leak Emission Estimates*.

Table C-31 summarizes total emissions from the new and affected units as a result of the project (i.e., PTE and PAE). This table includes both the individual emissions units' PAE or PTE rates and the total projected emissions rates on a pollutant-by-pollutant basis.

Could Have Accommodated Emissions Rates

Tables C-32 and C-33 detail the excludable emissions analysis, or emissions that "could have been accommodated" during the baseline period. The applicable NSR regulations establish that the source may exclude that portion of the emissions that the unit CHA during the baseline period and that are unrelated to the project, including increase utilization due to demand growth as per 25 Pa. Code §127.203a(a)(5)(i)(c) and 40 CFR §52.21(b)(41).

Monroe determined CHA emissions by annualizing the highest monthly emissions for each affected unit and pollutant within the selected baseline period for that pollutant. This approach represents a reasonable estimation of what the source was capable of emitting at a sustained level during the baseline period. CHA emissions were then evaluated as part of the process detailed in

Table C-33, where the CHA emissions are factored into the determination of the total project increases.

PSD and NNSR applicability is assessed in the Regulatory Analysis section of this application.

REGULATORY ANALYSIS

Monroe has reviewed the Federal and Commonwealth of Pennsylvania air quality regulations to determine which regulations potentially apply to the proposed project. A summary of potentially applicable air quality requirements follows.

FEDERAL REGULATIONS

For the purpose of this application, potentially applicable Federal regulations are defined as:

- Standards of Performance for New Stationary Sources (NSPS)
- National Emission Standards for Hazardous Air Pollutants (NESHAP)
- New Source Review (NSR)

A discussion of each specific Federal requirement is provided in the following subsections.

Standards of Performance for New Stationary Sources

U.S. EPA has promulgated standards of performance for new, modified, or reconstructed sources [i.e., New Source Performance Standards (NSPS)] of air pollution at 40 CFR Part 60. The following NSPS are potentially applicable to the proposed Ultra Low Sulfur Gasoline (ULSG) project:

- 40 CFR Part 60, Subpart A – General Provisions
- 40 CFR Part 60, Subpart Ja – Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007
- 40 CFR Part 60, Subpart GGGa – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

- 40 CFR Part 60, Subpart QQQ – Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems

40 CFR Part 60, Subpart A – General Provisions

The provisions of 40 CFR Part 60, Subpart A apply to the owner or operator of any stationary source subject to a NSPS under 40 CFR Part 60. Because the proposed project is subject to other subparts of 40 CFR Part 60, the requirements of Subpart A will also apply. Monroe will comply with each applicable section of 40 CFR Part 60, Subpart A.

40 CFR Part 60, Subpart Ja – Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007

Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007, have been codified in 40 CFR Part 60, Subpart Ja. Applicability to Subpart Ja is established in §60.100a(b) wherein owners and operators are deemed affected if a fuel gas combustion device (including process heaters) is constructed after May 14, 2007. The two (2) ULSG unit process heaters will be subject to 40 CFR Part 60, Subpart Ja. In accordance with §60.102a(g)(1)(ii), fuel gas combustion units may not burn fuel gas that contains H_2S in excess of 162 ppmv on a 3-hr rolling average basis and in excess of 60 ppmv daily on a 365-day rolling average basis. The Refinery's North Side fuel gas system supplies fuel gas that contains H_2S at concentrations lower than 60 ppmv, as it is currently required to meet a lower H_2S limit of 50 ppmv for Boilers 9 and 10 (Source IDs 034 and 035). Fuel gas supplied to the ULSG unit process heaters will continue to meet these existing lower H_2S concentration requirements. Pursuant to §60.107a(a)(2), Monroe is required to install, operate, calibrate, and maintain an instrument for continuous monitoring and recording of the concentration of H_2S before the fuel gas is burned. Monroe currently monitors the H_2S concentration in its refinery fuel gas using an approved continuous H_2S monitor. By complying with the fuel gas H_2S limit in §60.102a(g)(1)(ii), the proposed ULSG unit process heaters will not be subject to the SO_2 concentration limits of 40 CFR Part 60, Subpart Ja. 40 CFR Part 60, Subpart Ja does not require fuel gas combustion devices to comply with specific PM emission standards.

In accordance with §60.102a(g)(2)(i)(B), emissions of NO_X for natural draft process heaters firing refinery fuel gas are limited to 0.040 pounds per MMBtu (lb/MMBtu) higher heating value basis determined daily on a 30-day rolling average. Monroe proposes to meet this requirement by utilizing low NO_X burners to control the NO_X emissions from the proposed ULSG unit process heaters. Compliance will be assured by monitoring the type of fuel being fired, the fuel firing rate, fuel gas heating value (Btu/scf), and NO_X emissions by a continuous emission monitoring system (CEMS). Monroe will install and operate NO_X and O_2 CEMS on the proposed ULSG unit process heater stacks in accordance with §60.107a. In addition, the NO_X and O_2 CEMS on the proposed ULSG unit process heater stacks will be certified and operated pursuant to Revision 8 of PADEP's Continuous Source Monitoring Manual.

Pursuant to §60.103a(c)(2), Monroe will be required to conduct a root cause analysis and a corrective action analysis for the ULSG process heaters, for each instance that the SO_2 discharge to the atmosphere is 227 kilograms (500 pounds) greater than the amount that would have been emitted if the emission limit in §60.102a(g)(1)(ii) had been met during one (1) or more consecutive periods of excess emissions or any 24-hour period, whichever is shorter. Pursuant to §60.103a(d), the root cause analysis and corrective action analysis must be completed as soon as possible, but no later than 45 days after a discharge meeting the aforementioned condition.

In accordance with §60.104a(a), Monroe must conduct a NO_X performance test of the new ULSG unit process heaters no later than 60 days after achieving the maximum production rate or 180 days after initial startup, whichever comes first. The NO_X performance test must be conducted in accordance with §60.104a(i).

The notification, recordkeeping, and reporting requirements of §60.108a will apply to the ULSG unit process heaters subsequent to the project. Specifically, Monroe will meet the notification requirements of §60.108a(b), the applicable records maintenance requirements of §60.108a(c),the excess emissions reporting requirements of §60.108a(d), and all other applicable notification, recordkeeping or reporting requirements found in §60.7.

40 CFR Part 60, Subpart GGGa – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

The proposed ULSG unit is also potentially subject to 40 CFR Part 60, Subpart GGGa - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006, which establishes standards for equipment leaks of VOC. Pursuant to §60.590a(a), affected facilities are compressors or the group of equipment within a process unit. §60.591a defines a process unit as follows:

> "*Process unit means the components assembled and connected by pipes or ducts to process raw materials and to produce intermediate or final products from petroleum, unfinished petroleum derivatives, or other intermediates. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product. For the purpose of this subpart, process unit includes any feed, intermediate and final product storage vessels (except as specified in §60.482-1a(g)), product transfer racks, and connected ducts and piping. A process unit includes all equipment as defined in this subpart.*"

All of the valves, flanges, pumps, etc. associated with the proposed ULSG unit will be subject to this NSPS. The Refinery already has a number of existing components that are subject to Subpart GGGa, and the addition of the components associated with the ULSG unit will not change the existing Subpart GGGa requirements. Monroe will continue to comply with the applicable Subpart GGGa requirements.

40 CFR Part 60, Subpart QQQ – Standards of Performance for VOC Emissions from Petroleum Wastewater Systems

Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems have been codified in 40 CFR Part 60, Subpart QQQ, which addresses VOC emissions from individual

and aggregate drain systems, and oil-water separators, receiving oily wastewater from petroleum refinery process units. The blowdown from the proposed new cooling tower will be introduced into the existing onsite wastewater system and directed to the Trainer Refinery's existing onsite AWWTP. However, the cooling tower blowdown is not oily wastewater from a refinery process unit and thus installation of the cooling tower and associated blowdown drain piping will not be subject to Subpart QQQ. The proposed ULSG unit will not be subject to Subpart QQQ because the proposed unit will not include new drain systems to the AWWTP.

National Emission Standards for Hazardous Air Pollutants

U.S. EPA has promulgated National Emission Standards for Hazardous Air Pollutants (NESHAPs) at 40 CFR Parts 61 and 63. NESHAPs promulgated prior to the Clean Air Act Amendments (CAAA) of 1990, found in 40 CFR Part 61, apply to specific compounds emitted from specific processes. Pursuant to the CAAA of 1990, process-specific NESHAPs are promulgated in 40 CFR Part 63. NESHAPs rules promulgated under 40 CFR Part 63, commonly referred to as MACT standards, apply to source categories that are considered area sources or major sources of hazardous air pollutants (HAPs).

Under the MACT rules, a major source of HAP is defined as a source with the facility-wide potential to emit (PTE) of any single HAP of 10 tons per year or more, or with a facility-wide PTE for total HAP of 25 tons per year or more. The Refinery is classified as a major source of HAP emissions; therefore, the following NESHAPs are potentially applicable to the proposed ULSG project:

- 40 CFR Part 61, Subpart A – General Provisions
- 40 CFR Part 61, Subpart FF - National Emission Standard for Benzene Waste Operations
- 40 CFR Part 63, Subpart A – General Provisions
- 40 CFR Part 63 Subpart Q – National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers

- 40 CFR Part 63, Subpart CC - National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries

- 40 CFR Part 63, Subpart UUU - National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

- 40 CFR Part 63, Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

40 CFR Part 61, Subpart A – General Provisions

The provisions of 40 CFR Part 61, Subpart A apply to the owner or operator of any stationary source subject to a NESHAP under 40 CFR Part 61. Because the project is subject to other subparts of 40 CFR Part 61, the requirements of Subpart A will also apply. Monroe will comply with each applicable section of 40 CFR Part 61, Subpart A.

40 CFR Part 61, Subpart FF – National Emission Standard for Benzene Waste Operations

The National Emission Standard for Benzene Waste Operations (BWON) is codified in 40 CFR Part 61, Subpart FF and applies to petroleum refineries with benzene-containing hazardous waste. The proposed new cooling tower will direct blowdown to the existing AWWTP at the Refinery. Monroe samples and analyzes the influent to the AWWTP for benzene and other HAPs as part of the Refinery's existing BWON program, and will continue to do so following the project.

40 CFR Part 63, Subpart A – General Provisions

The provisions of 40 CFR Part 63, Subpart A apply to the owner or operator of any stationary source subject to a NESHAP under 40 CFR Part 63. Because the project is subject to other subparts of 40 CFR Part 63, the requirements of Subpart A will also apply. Monroe will comply with each applicable section of 40 CFR Part 63, Subpart A.

40 CFR Part 63, Subpart Q – National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers

The NESHAPs for Industrial Process Cooling Towers have been codified at 40 CFR Part 63, Subpart Q. Subpart Q affects all new industrial process cooling towers that are operated with the use of chromium-based water treatment chemicals and that are integral parts of a facility that is a major source. The Trainer Refinery is a major source of HAP emissions and therefore, the proposed cooling tower is potentially subject to Subpart Q. The Refinery has no plans to use chromium-based chemicals in the new cooling tower and requests that PADEP include a requirement in the plan approval for the proposed cooling tower that prohibits the use of chromium-based chemicals to avoid triggering Subpart Q. A similar condition exists in the Refinery's current TVOP for the existing cooling towers (Source ID 111). Therefore, Subpart Q will not apply.

40 CFR Part 63, Subpart CC – National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries

The NESHAPs for Petroleum Refineries have been codified in 40 CFR Part 63, Subpart CC and includes provisions that apply to all heat exchange systems in HAP service at petroleum refineries. The proposed cooling tower and all petroleum refinery process unit heat exchangers that are in organic HAP service (as defined in §63.641), and serviced by the cooling tower, and all water lines to and from these petroleum refinery process unit heat exchangers, are considered a heat exchange system and are subject to Subpart CC, specifically §63.654. Monroe will follow the monitoring plan requirements of §63.654(c)(1) for closed-loop recirculation heat exchange systems and the applicable reporting and recordkeeping requirements outlined in §63.655. Compliance is required upon startup.

The *"affected source"* under 40 CFR Part 63, Subpart CC is defined as *"…the collection of emission points to which this subpart applies as determined by the criteria in §63.640"*. The addition of the proposed cooling tower is not considered *"reconstruction"* of the existing affected

source pursuant to 40 CFR Part 63, Subpart A (§63.2 – Definitions), because the fixed capital cost of the proposed cooling tower does not exceed 50 percent of the fixed capital cost that would be required to construct a comparable new source. Therefore, the affected source under 40 CFR Part 63, Subpart CC at the Refinery will remain an existing source, and for equipment in HAP service compliance with the provisions of 40 CFR Part 60, Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006 is specified under 40 CFR Part 63, Subpart CC (§63.648(a)(1)). As previously stated, the fugitive components associated with the proposed ULSG unit will be subject to fugitive emission monitoring pursuant to Subpart GGGa. Because the monitoring requirements are more stringent than the monitoring requirements of Subpart VV, the Refinery's compliance with Subpart GGGa will ensure compliance with Subpart VV, and thus ensure compliance with Subpart CC.

40 CFR Part 63, Subpart CC also includes standards for storage vessels and wastewater streams, at §63.646 and §63.647, respectively. Monroe has previously established monitoring, recordkeeping, and reporting systems for existing affected sources in accordance with the provisions of §63.653 and §63.644. Monroe will integrate newly affected sources and processes into the existing monitoring, recordkeeping, an reporting systems, as applicable.

40 CFR Part 63, Subpart UUU – National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

40 CFR Part 63, Subpart UUU – National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units, which applies to process vents or bypass lines on catalytic cracking units, catalytic reforming units, and sulfur recovery plant units at petroleum refineries. The proposed ULSG unit will not be subject to Subpart UUU; however, the proposed project will result in a nominal increase of crude throughput at the Refinery of 5,000 barrels per day which will in turn affect the Refinery's

units that are subject to Subpart UUU (i.e., the Platformer, FCC Unit, and SRU). The increase in crude throughput will not require the reconstruction of any Subpart UUU affected sources at the Refinery; therefore, no new requirements of Subpart UUU will be triggered as a result of the project and the Refinery will continue to comply with the applicable provisions of Subpart UUU following the proposed project.

40 CFR Part 63, Subpart DDDDD – National Emission Standards for Industrial, Commercial, and Institutional Boilers and Process Heaters

The NESHAPs for Industrial, Commercial, and Institutional Boilers and Process Heaters have been codified in 40 CFR Part 63, Subpart DDDDD (Boiler MACT), and will be applicable to the proposed H-01 and H-02 process heaters that are associated with the proposed ULSG process. The process heaters and ULSG processing unit are approximately ten years old and are being purchased by Monroe from an existing nearby refinery which ceased operations in 2010. Because the heaters are not new and are not being reconstructed, they are considered existing sources under Subpart DDDDD in accordance with §63.7490(d). As existing process heaters, compliance must be achieved by January 31, 2016, or upon start-up. The proposed USLG process and associated processes will not start-up prior to January 31, 2016, therefore, compliance with the applicable Boiler MACT provisions will be demonstrated upon start-up.

The proposed H-01 and H-02 process heaters will combust only refinery gas, which meets the Boiler MACT definition of a gas 1 fuel. Pursuant to §63.7500(e), units designed to combust gas 1 fuels are not subject to the emissions limits in Subpart DDDDD when combusting only gas 1 fuels. Boilers and process heaters that combust only gas 1 fuels (e.g., natural gas and refinery gas), are subject only to the work practice standards codified in Subpart DDDDD. This includes the annual tune-up requirements specified at §63.7540(a)(10) and a one-time energy assessment specified at §63.7510(j). Monroe will comply with the applicable portions of the Boiler MACT provisions upon startup of the proposed H-01 and H-02 process heaters.

New Source Review (NSR)

The Trainer Refinery is located in Delaware County. Delaware County is classified as in attainment or unclassifiable for the NAAQS for all NSR-regulated pollutants except $PM_{2.5}$ and ozone. Therefore, the Refinery must evaluate applicability of both the NNSR and PSD regulations.

Nonattainment New Source Review (NNSR)

U.S. EPA has approved PADEP's NNSR regulations through their incorporation into Pennsylvania's State Implementation Plan (SIP). These state-specific NNSR regulations are codified in Title 25 – Environmental Protection of the Pennsylvania Code (Pa. Code) Chapter 127, Subchapter E. NNSR applicability is addressed under the Commonwealth of Pennsylvania regulatory review section of this application.

Prevention of Significant Deterioration (PSD)

Pennsylvania has adopted the Federal PSD regulations cited at 40 CFR §52.21 in their entirety in Subchapter D of Chapter 127 of the state air regulations. The Trainer Refinery meets the definition of a major stationary source with respect to the Federal PSD rules. Therefore, the proposed project emissions must be evaluated to determine if the project qualifies as a major modification under the PSD regulations. In order to determine whether a proposed project at an existing major source is subject to regulation under the PSD rules, a two (2)-step applicability test is required. In Step 1, the emissions increases from the new, modified, and affected emissions units comprising the project are summed and compared to the PSD significant emission increase thresholds for each regulated NSR pollutant emitted. If the project emissions increases exceed the significance levels for any of the regulated NSR pollutants, a Step 2 analysis that evaluates net facility-wide emissions increases is required. If no PSD significant increases are determined under the Step 1 assessment, the Step 2 analysis is not required. Table C-34 in Attachment C presents the PSD applicability assessment for the proposed project. As demonstrated by the data presented in the table, the emissions increases for the regulated NSR pollutants emitted for the project emissions units are

below the PSD significance levels for Step 1. As a result, no further assessment is required and the proposed project is not subject to the PSD permitting requirements.

COMMONWEALTH OF PENNSYLVANIA REGULATIONS

The proposed project is potentially subject to the following Pennsylvania air quality regulations which are codified in Title 25 – Environmental Protection of the Pennsylvania Code (Pa. Code):

- Chapter 122 – National Standards of Performance for New Stationary Sources
- Chapter 123 – Standards for Contaminants
- Chapter 124 – National Emission Standards for Hazardous Air Pollutants
- Chapter 127 – Construction, Modification, Reactivation, and Operation of Sources
- Chapter 129 – Standards for Sources

A discussion of each specific Commonwealth requirement is provided in the following subsections.

Chapter 122 – National Standards of Performance for New Stationary Sources

The Federal NSPS are adopted in their entirety by reference at 25 Pa. Code §122.3 and are discussed in detail in the preceding section regarding Federal requirements.

Chapter 123 – Standards for Contaminants

The following sections of 25 Pa. Code Chapter 123 are applicable to the two (2) proposed process heaters:

Fugitive Dust Standards (25 Pa. Code §§123.1 & 123.2)

Fugitive dust emissions are prohibited from sources except those listed in 25 Pa. Code §123.1(a), for which reasonable actions shall be taken to minimize fugitive dust. The Refinery currently complies with the provisions of §§123.1 and 123.2 by employing good operating practices such as locating operations inside buildings, paved roadways, and prompt cleanup of any material spills.

Regulations that the Refinery has determined are generally applicable, such as §123.1 and §123.2, are not further identified or discussed as these provisions apply facility-wide.

Particulate Matter Standards (25 Pa. Code §§123.11 & 123.13)

25 Pa. Code §123.11 is applicable to combustion sources with heat inputs greater than 2.5 MMBtu/hr. The proposed ULSG unit process heaters, designated as H-02, has a heat input rating of 44.2 MMBtu/hr; therefore, pursuant to §123.11(a)(1), the allowable filterable PM emission limit for the H-02 process heater is 0.40 lb/MMBtu. The other proposed ULSG unit process heater, designated as H-01, is rated at 99.6 MMBtu/hr; therefore, pursuant to §123.11(a)(2) the following formula must be employed to determine the allowable emissions rate:

$$A = 3.6E^{-0.56}$$

where:

A = Allowable emissions in pounds per million British thermal units (MMBtu) of heat input, and

E = Heat input to the combustion unit in MMBtu/hr.

The allowable filterable PM emission limit for the H-02 process heater is 0.27 lb/MMBtu when operating at its rated capacity. Compliance with the filterable PM emission limits for both process heaters will be assured by firing only refinery fuel gas and by operation of the proposed two (2) heater according to the applicable Boiler MACT work practice standards.

Sulfur Compound Standards (25 Pa. Code §§123.21 & 123.22)

As combustion sources, the proposed ULSG unit process heaters will be subject to 25 Pa. Code §123.22 (Combustion Units), which limits SO_2 emissions to 1.0 lb/MMBtu for facilities located in the inner Southeast Pennsylvania air basin. Compliance with this requirement will be assured through compliance with 40 CFR Part 60, Subpart Ja for fuel combustion devices.

Visible Emissions Standards (25 Pa. Code §§123.41 & 123.42)

The proposed ULSG unit process heaters will be subject to 25 Pa. Code §123.41 which limits visible emissions from stack sources to (1) equal to or greater than 20% for a period or periods aggregating more than 3 minutes in any 1 hour, and (2) equal to or greater than 60% at any time, except as noted in §123.42. Compliance with this standard will be ensured by combusting gaseous fuels and employing good air pollution control practices.

The following sections of 25 Pa. Code Chapter 123 are applicable to the proposed ULSG unit cooling tower:

Particulate Matter Standards (25 Pa. Code §§123.11 & 123.13)

The proposed cooling tower is classified as process sources under the Pennsylvania air quality regulations and are therefore subject to the 25 Pa. Code §123.13 – Processes requirements. Under §123.13(c)(1)(iii), a cooling tower with a effluent gas volume greater than 300,000 actual cubic feet per minute (acfm), may not emit filterable PM from in excess of 0.02 grains per dry standard cubic foot (gr/dscf). The proposed cooling tower will have an approximate effluent gas volume greater than 300,000 acfm, and therefore is subject to §123.13(c)(1)(iii). Installation, operation and maintenance of drift eliminators in accordance with the manufacturer's specifications will help ensure compliance with this standard.

Chapter 124 – National Emission Standards for Hazardous Air Pollutants

The Federal NESHAP are adopted in their entirety by reference at 25 Pa. Code §124.3 and are discussed in detail in the preceding section regarding Federal requirements.

Chapter 127 – Construction, Modification, and Reactivation of Sources

Subchapter B – Plan Approval Requirements

The proposed project is subject to the requirements of 25 Pa. Code Chapter 127 Subchapter B, which established Plan Approval requirements. 25 Pa. Code §127.11 requires PADEP approval

to construct, modify, reactivate, or install an air contamination source. Monroe is submitting this application in accordance with 25 Pa. Code §127.12, Application Contents. 25 Pa. Code §127.12(a)(5) also requires that Plan Approval Applications show that the emissions from a new source be the minimum attainable through the use of best available technology (BAT). A BAT analysis is included in a subsequent section of this submittal.

Subchapter D – Prevention of Significant Deterioration of Air Quality

Pennsylvania incorporates the Federal PSD regulations by reference at 25 Pa. Code §127.83. A discussion of PSD applicability with respect to the proposed project is included under the Federal requirements.

Subchapter E – Nonattainment New Source Review (NNSR)

Delaware County is currently classified as nonattainment with respect to the 2012 annual $PM_{2.5}$ NAAQS, and is managed as a severe nonattainment area with respect to the ozone eight (8)-hour NAAQS for permitting applicability purposes. Similar to the Federal PSD rules, under PADEP's NNSR rules a project must have both a significant emissions increase and a significant net emissions increase of the nonattainment pollutant or precursor pollutants to be a major modification. Table C-35 in Attachment C presents the results of the PADEP NNSR permitting applicability evaluation for ozone and $PM_{2.5}$. The project related emissions increases are below the NNSR significance levels for nonattainment pollutants and precursors as determined in accordance with 25 Pa. Code §127.203a requirements. As a result, no further assessment is required.

Because the project results in a de minimis emission increase, Monroe must evaluate the proposed VOC and NO_X emissions increases from the project and aggregate the project-related emissions increases with other increases and decreases of VOC and NO_X which occurred within 10 years prior to the date of submission of a complete application. If the aggregated emissions increase meets or exceeds the emissions rate that is significant, only the emissions offset requirements in §127.205(3) (relating to special permit requirements) apply to the aggregated emissions increases.

Table C-36, in Attachment C, summarizes projects that have occurred at the refinery during the 10-year aggregation periods specified under 25 Pa. Code §127.203a that have resulted in net emissions increases in NO_X and VOC. The net increases have been summed with the proposed ULSG project emissions in Table C-36 and the results demonstrate that the 10-year emission offset requirements of §127.205(3) for ozone NNSR requirements apply to the installation of the proposed ULSG project for NO_X. Therefore, Monroe Energy intends to purchase 48 tpy of NO_X emission reduction credits (which is an emission offset of 1.3 to 1 for the 10-year net emission increase of 36.62 tpy of NO_X, rounded to a whole number) in order to comply with the applicable ozone NNSR regulations.

Subchapter I – Plan Approval and Operating Permit Fees

25 Pa. Code §127.702 specifies the fee required to submit an operating permit application for facilities. The proposed project will be subject to 25 Pa. Code Subchapter E (i.e., NSR) and Chapter 122 requirements (i.e., NSPS); therefore, a check for $7,000.00 payable to the "Commonwealth of Pennsylvania - Clean Air Fund" has been provided to PADEP as part of this application.

Chapter 129 – Standards for Sources

VOC emission control standards for specific sources at petroleum refineries are addressed in 25 Pa. Code §129.55. The specific sources subject to §129.55 include wastewater separators, pumps and compressors, vacuum-producing systems and process units during turnarounds. The proposed fugitive equipment to be installed as part of the project will include pumps and compressors handling VOC with a vapor pressure greater than 1.5 psia at actual conditions. The proposed pumps and compressors that will be installed as part of the project will comply with applicable provisions of §129.55.

Standards for monitoring and repairing certain refinery components that have the potential to leak VOC are addressed in 25 Pa. Code §129.58. The proposed ULSG unit and cooling tower are not refinery components as defined in §121.1. Therefore these units will not be subject to §129.58.

Pursuant to §129.58, petroleum refineries must develop a monitoring plan for certain components with the potential to leak VOC emissions. Certain components of the ULSG unit will be subject to the requirements of a PADEP-approved monitoring plan. Compliance with 40 CFR Part 60, Subpart GGGa serves as compliance for §129.58. The new potential VOC fugitive emissions components will be incorporated in the Refinery's existing alternative monitoring plan and the Refinery will remain in compliance with applicable requirements of Subpart GGGa and §129.58.

The 2014 Proposed Additional RACT Requirements for Major Stationary Sources of NO_X and VOC (RACT 2) will apply to various sources at the Monroe Refinery, including the proposed process heaters (H-01 and H-02) and the proposed new cooling tower when and if the rule is finalized. The proposed rule defines specific reasonably available control technology (RACT) limits for many types of emissions units (including process heaters) and specifies "presumptive" limits for others. It also includes provisions for "case-by-case" RACT analyses to be conducted in accordance with the existing RACT rules at §§129.91 -129.95. Under the currently proposed RACT 2 rule, process heater H-01 (99.6 MMBtu/hr) would be subject to a NO_X RACT standard of 0.25 lb NO_X/MMBtu in accordance with proposed §129.97(g)(1)(iv). Process heater H-02 (44.0 MMBtu/hr) would be subject to a "case-by-case" RACT analyses in accordance with proposed §129.99(b). Both of the process heaters would be subject to the presumptive VOC RACT standard for combustion units or other combustion sources at proposed §129.97(d). The proposed new cooling tower would be subject to a "case-by-case" RACT analyses in accordance with proposed §129.99(c). Monroe will comply with the applicable portions of the RACT 2 rule when the proposed rule is finalized.

Best Available Technology

Pursuant to 25 Pa. Code §127.12(5), an application submitted for PADEP approval shall show that emissions from a new source, or a source which was constructed and commences operation on or after July 1, 1972, will be the minimum attainable through the use of best available technology (BAT).

Proposed ULSG Unit Process Heaters

NO_X BAT

Monroe evaluated the following potential NO_X control technologies:

- Flue Gas Recirculation (FGR)

  FGR is the recirculation of cooled flue gas which acts as a heat sink and absorbs heat from the flame to reduce peak flame temperatures. When mixed with combustion air, the recirculated flue gas dilutes the oxygen content of combustion air and therefore reduces the formation of thermal NO_X. Success with FGR on boilers demonstrates the capability of the technique. However, combustion air is supplied to the proposed ULSG unit process heaters by natural draft, and thus recirculation of flue gas is not technically feasible.

- Low NO_X Burners (LNB)

  LNB are front-end combustion controls for process heaters and boilers. LNB reduce emissions of thermal NO_X by lowering peak flame temperatures. LNB technology is feasible and the proposed new heaters will be equipped with Callidus LNB that are guaranteed no to exceed an emission rate of 0.035 lb/MMBtu on a 30-day rolling average basis.

- Selective Non-Catalytic Reduction (SNCR)

  SNCR reduces NO_X by reactions with ammonia. SNCR is only effective in a temperature window in the 1,600 °F to 1,800 °F range when adequate gas residence time is available. Monroe contacted the following SNCR vendors and provided them with the physical dimensions and operating conditions of the proposed ULSG unit process heaters: Fuel Tech, Inc., HAMON Corporation, and De-NO_X Technologies, LLC. These vendors have advised Monroe that installation of SNCR on the proposed ULSG unit process heaters

would not be technically feasible due to inadequate temperature and residence time for NO_X reduction by ammonia.

- Selective Catalytic Reduction (SCR)

  SCR uses ammonia as a reagent and a catalyst to reduce NO_X emissions at an operating temperature near 600°F. SCR catalysts are composed of active metals or ceramics with a highly porous structure containing activated sites where the reduction reaction occurs. SCR requires a forced draft air flow to overcome the pressure drop imposed on the exhaust flow by the catalyst bed(s). As previously stated, the proposed new heaters are natural draft; therefore, the installation and operation of SCR is not technically feasible.

Monroe considers compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), the application of LNB and the proposed NO_X emission limit of 0.035 lb/MMBtu as BAT for NO_X emissions from the two (2) proposed ULSG unit process heaters.

Carbon Monoxide BAT

Monroe evaluated CO catalyst technology, use of FGR, proper operation, and good combustion and engineering practices, as potential CO control technologies. For the reasons stated above, FGR and catalyst technology are not technically feasible for the proposed ULSG unit process heaters. Monroe therefore considers compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), proper operation and good combustion and engineering practices as BAT for CO emissions from the two (2) proposed ULSG unit process heaters.

Volatile Organic Compounds BAT

Monroe evaluated VOC catalyst technology, use of FGR, proper operation, and good combustion and engineering practices, as potential VOC control technologies. As discussed above, Monroe considers the use of catalyst technology and FGR, to be technically infeasible for the two (2)

proposed process heaters. Monroe therefore considers BAT for VOC to be compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), proper design, operation and good combustion and engineering practices.

PM BAT

PM emissions associated with the use of gaseous fuels are primarily a result of incomplete fuel combustion. By carefully controlling the combustion process, PM emissions can be minimized. Monroe considers BAT for PM for the two (2) proposed process heaters to be compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), proper design, operation, and good combustion and engineering practices.

SO_2 BAT

During fuel combustion, SO_2 emissions result from the oxidation of sulfur contained in the fuels. Monroe will fire only refinery fuel gas in the proposed ULSG unit process heaters. Monroe considers BAT for SO_2 for the two (2) proposed process heaters to be compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning) and the firing of refinery fuel gas that meets the requirements of 40 CFR Part 60, Subpart Ja.

Proposed Cooling Tower

BAT for the proposed cooling tower was considered for both $PM_{2.5}$ and VOC. For $PM_{2.5}$, the best available cooling tower control method that Monroe is aware of is high efficiency drift eliminator with a drift rate of 0.0005%. For VOC, monthly monitoring for leaks from heat exchangers is available. Monroe contacted the Louisiana Department of Environmental Quality (LDEQ) and the Texas Commission of Environmental Quality (TCEQ), two (2) states which have a large population of oil refineries, and confirmed that no other compliance methods have been used in these states. Monroe therefore considers a guaranteed drift rate of 0.0005% and leak monitoring to represent BAT for the proposed cooling tower. Monroe Energy proposes to install the cooling tower with a manufacturer guaranteed drift rate of 0.0005% and operate the cooling tower in

accordance with the manufacturer's specifications to minimize PM emissions. Monroe will also monitor the cooling tower monthly in accordance with 40 CFR Part 63, Subpart CC, and calculate monthly emissions using the methodology in the guidance developed by the Texas Commission of Environmental Quality (TCEQ), titled *Air Stripping Method (Modified El Paso Method) for Determination of Volatile Organic Compound Emissions from Water Sources*, Sampling Procedures Manual, Appendix P: Cooling Tower Monitoring Guidance.

ATTACHMENT B
PADEP APPLICATION FORMS

1300-PM-BIT0001 5/2012
Form

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

GENERAL INFORMATION FORM – AUTHORIZATION APPLICATION

Before completing this General Information Form (GIF), read the step-by-step instructions provided in this application package. This version of the General Information Form (GIF) must be completed and returned with any program-specific application being submitted to the Department.

Related ID#s (If Known)				DEP USE ONLY
Client ID#	*296139*	APS ID#	*786645*	Date Received & General Notes
Site ID#	*270501*	Auth ID#	*951731*	
Facility ID#	*293037*			

CLIENT INFORMATION

DEP Client ID#	Client Type / Code
296139	*Non-Government/LLC*

Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#
Monroe Energy, LLC	*45-5201144*	*Unknown*

Individual Last Name	First Name	MI	Suffix	SSN

Additional Individual Last Name	First Name	MI	Suffix	SSN

Mailing Address Line 1	Mailing Address Line 2
Trainer Refinery	*4101 Post Road*

Address Last Line – City	State	ZIP+4	Country
Trainer	*PA*	*19061*	*U.S.A.*

Client Contact Last Name	First Name	MI	Suffix
Warmann	*Jeffrey*	*K*	

Client Contact Title	Phone	Ext
CEO and President	*610-364-8000*	

Email Address	FAX
jeff.warmann@monroe-energy.com	

SITE INFORMATION

DEP Site ID#	Site Name
270501	*Trainer Refinery*

EPA ID# *110046121807* **Estimated Number of Employees to be Present at Site** *~450*

Description of Site
Petroleum Refinery

County Name	Municipality	City	Boro	Twp	State
Delaware	*Trainer*	☐	☒	☐	
		☐	☐	☐	

Site Location Line 1	Site Location Line 2
Trainer Refinery	

Site Location Last Line – City	State	ZIP+4
Trainer	*PA*	*19061*

Detailed Written Directions to Site
I-95S exit @ Route 452 (Market Street) South to Route 13. Make left turn onto Rt. 13N (Post Road). 2 miles on right hand side to the Trainer Refinery. Enter @ Visitor's Entrance on Post Road. Request escort by Environmental Dept. personnel.

Site Contact Last Name	First Name	MI	Suffix
Torell	*Matt*		

Site Contact Title	Site Contact Firm
Environmental Leader	

Mailing Address Line 1	Mailing Address Line 2
Trainer Refinery	*4101 Post Road*

Mailing Address Last Line – City	State	ZIP+4
Trainer	*PA*	*19061*

Phone	Ext	FAX	Email Address
610-364-8399		*610-364-8614*	*matt.torell@monroe-energy.com*

NAICS Codes (Two- & Three-Digit Codes – List All That Apply): *324*

6-Digit Code (Optional): *324110*

Client to Site Relationship
OWNOP

FACILITY INFORMATION

Modification of Existing Facility

		Yes	No
1.	**Will this project modify an existing facility, system, or activity?**	☒	☐
2.	**Will this project involve an addition to an existing facility, system, or activity?**	☒	☐

If "Yes", check all relevant facility types and provide DEP facility identification numbers below.

	Facility Type	DEP Fac ID#		Facility Type	DEP Fac ID#
☒	Air Emission Plant	*293037*	☐	Industrial Minerals Mining Operation	
☐	Beneficial Use (water)		☐	Laboratory Location	
☐	Blasting Operation		☐	Land Recycling Cleanup Location	
☐	Captive Hazardous Waste Operation		☐	MineDrainageTrmt/LandRecyProjLocation	
☐	Coal Ash Beneficial Use Operation		☐	Municipal Waste Operation	
☐	Coal Mining Operation		☐	Oil & Gas Encroachment Location	
☐	Coal Pillar Location		☐	Oil & Gas Location	
☐	Commercial Hazardous Waste Operation		☐	Oil & Gas Water Poll Control Facility	
☐	Dam Location		☐	Public Water Supply System	
☐	Deep Mine Safety Operation -Anthracite		☐	Radiation Facility	
☐	Deep Mine Safety Operation -Bituminous		☐	Residual Waste Operation	
☐	Deep Mine Safety Operation -Ind Minerals		☐	Storage Tank Location	
☐	Encroachment Location (water, wetland)		☐	Water Pollution Control Facility	
☐	Erosion & Sediment Control Facility		☐	Water Resource	
☐	Explosive Storage Location		☐	Other:	

Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
NPDES Discharge Point	***39***	***49***	***1***	***75***	***24***	***59***

Horizontal Accuracy Measure: Feet --or-- Meters *+/- 2*

Horizontal Reference Datum Code
- ☐ North American Datum of 1927
- ☐ North American Datum of 1983
- ☐ World Geodetic System of 1984

Horizontal Collection Method Code: ***GPS***

Reference Point Code: ***INPIP***

Altitude: Feet --or-- Meters

Altitude Datum Name
- ☐ The National Geodetic Vertical Datum of 1929
- ☒ The North American Vertical Datum of 1988 (NAVD88)

Altitude (Vertical) Location Datum Collection Method Code: ***UNSPF***

Geometric Type Code: ***Point***

Data Collection Date: ***11-19-1997***

Source Map Scale Number: ***1*** Inch(es) = ***40*** Feet

--or-- Centimeter(s) = Meters

PROJECT INFORMATION

Project Name
Tier 3 Gasoline Project Plan Approval Application

Project Description
The proposed project will install new sources needed to meet gasoline sulfur level requirements of the U.S. Environmental Protection Agency (U.S. EPA) Tier 3 Motor Vehicle Emission and Fuel Standards rule.

Project Consultant Last Name	First Name	MI	Suffix
Lebo	*Neal*	*S*	

Project Consultant Title	Consulting Firm
Project Manager	*All4 Inc.*

Mailing Address Line 1	Mailing Address Line 2	
2393 Kimberton Road	*PO Box 299*	
Address Last Line – City	**State**	**ZIP+4**
Kimberton	*PA*	*19442-0299*

Phone	Ext	FAX	Email Address
610-933-5246	*113*	*610-933-5127*	*nlebo@all4inc.com*

Time Schedules	Project Milestone (Optional)

1.	**Have you informed the surrounding community and addressed any concerns prior to submitting the application to the Department?**	☒	Yes	☐	No
2.	**Is your project funded by state or federal grants?**	☐	Yes	☒	No
	Note: If "Yes", specify what aspect of the project is related to the grant and provide the grant source, contact person and grant expiration date. Aspect of Project Related to Grant Grant Source: _____ Grant Contact Person: _____ Grant Expiration Date: _____				
3.	**Is this application for an authorization on Appendix A of the Land Use Policy? (For referenced list, see Appendix A of the Land Use Policy attached to GIF instructions)**	☐	Yes	☒	No
	Note: If "No" to Question 3, the application is not subject to the Land Use Policy. If "Yes" to Question 3, the application is subject to this policy and the Applicant should answer the additional questions in the **Land Use Information** section.				

LAND USE INFORMATION

Note: Applicants are encouraged to submit copies of local land use approvals or other evidence of compliance with local comprehensive plans and zoning ordinances.

1.	**Is there an adopted county or multi-county comprehensive plan?**	☐	Yes	☒	No
2.	**Is there an adopted municipal or multi-municipal comprehensive plan?**	☐	Yes	☒	No
3.	**Is there an adopted county-wide zoning ordinance, municipal zoning ordinance or joint municipal zoning ordinance?**	☐	Yes	☒	No
	Note: If the Applicant answers "No" to either Questions 1, 2 or 3, the provisions of the PA MPC are not applicable and the Applicant does not need to respond to questions 4 and 5 below. If the Applicant answers "Yes" to questions 1, 2 and 3, the Applicant should respond to questions 4 and 5 below.				
4.	**Does the proposed project meet the provisions of the zoning ordinance or does the proposed project have zoning approval?** If zoning approval has been received, attach documentation.	☐	Yes	☐	No
5.	**Have you attached Municipal and County Land Use Letters for the project?**	☐	Yes	☐	No

COORDINATION INFORMATION

Note: The PA Historical and Museum Commission must be notified of proposed projects in accordance with DEP Technical Guidance Document 012-0700-001 and the accompanying Cultural Resource Notice Form.

If the activity will be a mining project (i.e., mining of coal or industrial minerals, coal refuse disposal and/or the operation of a coal or industrial minerals preparation/processing facility), respond to questions 1.0 through 2.5 below.

If the activity will not be a mining project, skip questions 1.0 through 2.5 and begin with question 3.0.

1.0	**Is this a coal mining project?** If "Yes", respond to 1.1-1.6. If "No", skip to Question 2.0.	☐	Yes	☒	No
1.1	**Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be equal to or greater than 200 tons/day?**	☐	Yes	☐	No
1.2	**Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be greater than 50,000 tons/year?**	☐	Yes	☐	No
1.3	**Will this coal mining project involve coal preparation/ processing activities in which thermal coal dryers or pneumatic coal cleaners will be used?**	☐	Yes	☐	No
1.4	**For this coal mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?**	☐	Yes	☐	No
1.5	**Will this coal mining project involve the construction of a permanent impoundment meeting one or more of the following criteria: (1) a contributory drainage area exceeding 100 acres; (2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet?**	☐	Yes	☐	No
1.6	**Will this coal mining project involve underground coal mining to be conducted within 500 feet of an oil or gas well?**	☐	Yes	☐	No
2.0	**Is this a non-coal (industrial minerals) mining project?** If "Yes", respond to 2.1-2.6. If "No", skip to Question 3.0.	☐	Yes	☒	No
2.1	**Will this non-coal (industrial minerals) mining project involve the crushing and screening of non-coal minerals other than sand and gravel?**	☐	Yes	☐	No
2.2	**Will this non-coal (industrial minerals) mining project involve the crushing and/or screening of sand and gravel with the exception of wet sand and gravel operations (screening only) and dry sand and gravel operations with a capacity of less than 150 tons/hour of unconsolidated materials?**	☐	Yes	☐	No
2.3	**Will this non-coal (industrial minerals) mining project involve the construction, operation and/or modification of a portable non-metallic (i.e., non-coal) minerals processing plant under the authority of the General Permit for Portable Non-metallic Mineral Processing Plants (i.e., BAQ-PGPA/GP-3)?**	☐	Yes	☐	No
2.4	**For this non-coal (industrial minerals) mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?**	☐	Yes	☐	No
2.5	**Will this non-coal (industrial minerals) mining project involve the construction of a permanent impoundment meeting one or more of the following criteria: (1) a contributory drainage area exceeding 100 acres; (2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet?**	☐	Yes	☐	No
3.0	**Will your project, activity, or authorization have anything to do with a well related to oil or gas production, have construction within 200 feet of, affect an oil or gas well, involve the waste from such a well, or string power lines above an oil or gas well?** If "Yes", respond to 3.1-3.3. If "No", skip to Question 4.0.	☐	Yes	☒	No

3.1	**Does the oil- or gas-related project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water (including wetlands)?**	☐	Yes	☐	No
3.2	**Will the oil- or gas-related project involve discharge of industrial wastewater or stormwater to a dry swale, surface water, ground water or an existing sanitary sewer system or storm water system?** If "Yes", discuss in *Project Description*.	☐	Yes	☐	No
3.3	**Will the oil- or gas-related project involve the construction and operation of industrial waste treatment facilities?**	☐	Yes	☐	No
4.0	**Will the project involve a construction activity that results in earth disturbance?** If "Yes", specify the total disturbed acreage. **4.0.1 Total Disturbed Acreage** ***~1.4 acres***	☒	Yes	☐	No
5.0	**Does the project involve any of the following?** If "Yes", respond to 5.1-5.3. If "No", skip to Question 6.0.	☐	Yes	☒	No
5.1	**Water Obstruction and Encroachment Projects – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water?**	☐	Yes	☐	No
5.2	**Wetland Impacts – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a wetland?**	☐	Yes	☐	No
5.3	**Floodplain Projects by the commonwealth, a Political Subdivision of the commonwealth or a Public Utility – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a floodplain?**	☐	Yes	☐	No
6.0	**Will the project involve discharge of stormwater or wastewater from an industrial activity to a dry swale, surface water, ground water or an existing sanitary sewer system or separate storm water system?**	☐	Yes	☒	No
7.0	**Will the project involve the construction and operation of industrial waste treatment facilities?**	☐	Yes	☒	No
8.0	**Will the project involve construction of sewage treatment facilities, sanitary sewers, or sewage pumping stations?** If "Yes", indicate estimated proposed flow (gal/day). Also, discuss the sanitary sewer pipe sizes and the number of pumping stations/treatment facilities/name of downstream sewage facilities in the *Project Description*, where applicable. **8.0.1 Estimated Proposed Flow (gal/day)**	☐	Yes	☒	No
9.0	**Will the project involve the subdivision of land, or the generation of 800 gpd or more of sewage on an existing parcel of land or the generation of an additional 400 gpd of sewage on an already-developed parcel, or the generation of 800 gpd or more of industrial wastewater that would be discharged to an existing sanitary sewer system?**	☐	Yes	☒	No
	9.0.1 Was Act 537 sewage facilities planning submitted and approved by DEP? If "Yes" attach the approval letter. Approval required prior to 105/NPDES approval.	☐	Yes	☐	No
10.0	**Is this project for the beneficial use of biosolids for land application within Pennsylvania?** If "Yes" indicate how much (i.e. gallons or dry tons per year). **10.0.1 Gallons Per Year (residential septage)** _____ **10.0.2 Dry Tons Per Year (biosolids)**	☐	Yes	☒	No
11.0	**Does the project involve construction, modification or removal of a dam?** If "Yes", identify the dam. **11.0.1 Dam Name**	☐	Yes	☒	No
12.0	**Will the project interfere with the flow from, or otherwise impact, a dam?** If "Yes", identify the dam. **12.0.1 Dam Name**	☐	Yes	☒	No

13.0	**Will the project involve operations (excluding during the construction period) that produce air emissions (i.e., NOX, VOC, etc.)?** If "Yes", identify each type of emission followed by the amount of that emission.	☒	Yes	☐	No
	13.0.1 Enter all types & amounts of emissions; separate each set with semicolons.	***Please refer to the Plan Approval Application letter accompanying this submittal.***			
14.0	**Does the project include the construction or modification of a drinking water supply to serve 15 or more connections or 25 or more people, at least 60 days out of the year?** If "Yes", check all proposed sub-facilities.	☐	Yes	☒	No
	14.0.1 Number of Persons Served				
	14.0.2 Number of Employee/Guests				
	14.0.3 Number of Connections				
	14.0.4 Sub-Fac: Distribution System	☐	Yes	☐	No
	14.0.5 Sub-Fac: Water Treatment Plant	☐	Yes	☐	No
	14.0.6 Sub-Fac: Source	☐	Yes	☐	No
	14.0.7 Sub-Fac: Pump Station	☐	Yes	☐	No
	14.0.8 Sub Fac: Transmission Main	☐	Yes	☐	No
	14.0.9 Sub-Fac: Storage Facility	☐	Yes	☐	No
15.0	**Will your project include infiltration of storm water or waste water to ground water within one-half mile of a public water supply well, spring or infiltration gallery?**	☐	Yes	☒	No
16.0	**Is your project to be served by an existing public water supply?** If "Yes", indicate name of supplier and attach letter from supplier stating that it will serve the project.	☒	Yes	☐	No
	16.0.1 Supplier's Name ***Chester Water Authority***				
	16.0.2 Letter of Approval from Supplier is Attached	☒	Yes	☐	No
17.0	**Will this project involve a new or increased drinking water withdrawal from a stream or other water body?** If "Yes", should reference both Water Supply and Watershed Management.	☐	Yes	☒	No
	17.0.1 Stream Name				
18.0	**Will the construction or operation of this project involve treatment, storage, reuse, or disposal of waste?** If "Yes", indicate what type (i.e., hazardous, municipal (including infectious & chemotherapeutic), residual) and the amount to be treated, stored, re-used or disposed.	☐	Yes	☒	No
	18.0.1 Type & Amount				
19.0	**Will your project involve the removal of coal, minerals, etc. as part of any earth disturbance activities?**	☐	Yes	☒	No
20.0	**Does your project involve installation of a field constructed underground storage tank?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit.	☐	Yes	☒	No
	20.0.1 Enter all substances & capacity of each; separate each set with semicolons.				
21.0	**Does your project involve installation of an aboveground storage tank greater than 21,000 gallons capacity at an existing facility?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit.	☐	Yes	☒	No
	21.0.1 Enter all substances & capacity of each; separate each set with semicolons.				
22.0	**Does your project involve installation of a tank greater than 1,100 gallons which will contain a highly hazardous substance as defined in DEP's Regulated Substances List, 2570-BK-DEP2724?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit.	☐	Yes	☒	No
	22.0.1 Enter all substances & capacity of each; separate each set with semicolons.				

23.0	**Does your project involve installation of a storage tank at a new facility with a total AST capacity greater than 21,000 gallons?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **23.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐	Yes	☒	No
24.0	**Will the intended activity involve the use of a radiation source?**	☐	Yes	☒	No

CERTIFICATION

I certify that I have the authority to submit this application on behalf of the applicant named herein and that the information provided in this application is true and correct to the best of my knowledge and information.

Type or Print Name *Jeffrey K. Warmann*

Signature	*CEO and President* **Title**	9/14/2015 **Date**

Chetkowski, David

Subject: FW: City Water Use at Monroe Energy
Attachments: Meters - addl cooling towers june_2014.xlsx

From: Brian P. Mac Ewen [mailto:bpmacewen@chesterwater.com]
Sent: Wednesday, June 11, 2014 9:53 AM
To: Kofeldt, Frank; Edwards, David
Cc: Thomas A. Zetusky, Sr.; Thomas Moore
Subject: RE: City Water Use at Monroe Energy

Frank – we have reviewed the current meters at the four locations nearest the proposed cooling towers and we offer the following for your information.

Each of the four meters has available additional capacity that in combination can supply the additional 3.815 MGD of use for the proposed three cooling towers. You will have to determine if your internal distribution piping can handle the additional flows.

The attached spreadsheet summarizes the four meter locations and also lists the 2014 average daily consumption (ADC) – these ADC values are in-line with the figures you provided from the October 2012 to October 2013 period.

For example, the C-3 Gate meter (#N62708266) has a continuous operating range of 30 - 2000 GPM, with intermittent max flows up to 2,500 GPM. The 2014 ADC for this site has been 673,000 GPD, which equates to an average usage of 467 GPM. Depending on your internal piping arrangement, I'm assuming this C-3 Gate meter would primarily feed the Cooling Tower #3 demand of 1.8 MGD (1,260 GPM). So the 2014 average usage of 467 GPM plus the average cooling tower usage of 1,260 GPM equals 1,727 GPM, which is within the existing meter's operating range. As long as your maximum instantaneous flows are within each meter's capability, it shouldn't be an issue.

The same analysis can be done for the other three meter sites as I'm assuming your internal piping layout would allow for a combined feed from these three meters to the proposed cooling towers #1 and #2.

If you would like to meet to review this meter capacity info in detail, let me know. There would be no additional capacity fees due as long as the meter sizes are not changed – just the additional usage fees at our standard rates.

Also, the CWA is considering a modernization program to change out these meters to our current meters (same size) that have a slightly larger flow capacity and more data logging capability (min, max flows, etc). Our Business Office will be in contact regarding this possible meter change out program.

If you have any questions, let me know.

Brian P. MacEwen, P.E.
Director of Engineering
Chester Water Authority
P.O. Box 467

Chester, PA 19016-0467
610-876-8185 x-1218
610-499-5993 (fax)
bpmacewen@chesterwater.com

From: Kofeldt, Frank [mailto:frank.kofeldt@monroe-energy.com]
Sent: Tuesday, June 03, 2014 2:18 PM
To: Brian P. Mac Ewen; Edwards, David
Cc: Steven C. Farney; Keith M. Johnston
Subject: RE: City Water Use at Monroe Energy

Brian,

Thanks for the feedback.

From: Brian P. Mac Ewen [mailto:bpmacewen@chesterwater.com]
Sent: Tuesday, June 03, 2014 1:34 PM
To: Kofeldt, Frank; Edwards, David
Cc: Steven C. Farney; Keith M. Johnston
Subject: RE: City Water Use at Monroe Energy

FYI- Patrick Martin is no longer with CWA, but we will respond to your request shortly.

Brian P. MacEwen, P.E.
Director of Engineering
Chester Water Authority
P.O. Box 467
Chester, PA 19016-0467
610-876-8185 x-1218
610-499-5993 (fax)
bpmacewen@chesterwater.com

From: Kofeldt, Frank [mailto:frank.kofeldt@monroe-energy.com]
Sent: Monday, June 02, 2014 8:53 AM
To: Engineer
Cc: Edwards, David
Subject: City Water Use at Monroe Energy

Patrick,

Would it be possible to send an email or letter to confirm that Chester Water Authority will be able to supply the refinery with the additional water we discussed previously. I attached the email Jagwinder Singh sent you. The additional use would be 3,815,000 per day (2649 gpm). We need the confirmation to proceed with our environmental permit.

The meter changes you suggested will be done as a part of the project.

Thanks,

Frank Kofeldt
Monroe Energy
Trainer Refinery
610-364-8072

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2700-PM-AQ0007 Rev. 7/2004

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Submit in Triplicate

PROCESSES

Application for Plan Approval to Construct, Modify or Reactivate an Air Contamination Source and/or Install an Air Cleaning Device

This application must be submitted with the General Information Form (GIF).

Before completing this form, read the instructions provided for the form.

Section A - Facility Name, Checklist And Certification

Organization Name or Registered Fictitious Name/Facility Name: ***Monroe Energy, LLC – Trainer Refinery***

DEP Client ID# (if known): ***296139***

Type of Review required and Fees:

- ☐ Source which is not subject to NSPS, NESHAPs, MACT, NSR and PSD: ..... $_____
- ☒ Source requiring approval under NSPS or NESHAPS or both: ..... $***1,700***
- ☒ Source requiring approval under NSR regulations: ..... $***5,300***
- ☐ Source requiring the establishment of a MACT limitation: ..... $_____
- ☐ Source requiring approval under PSD: ..... $_____

Applicant's Checklist

Check the following list to make sure that all the required documents are included.

- ☒ **General Information Form (GIF)**
- ☒ **Processes Plan Approval Application**
- ☒ **Compliance Review Form** or provide reference of most recently submitted compliance review form for facilities submitting on a periodic basis: ***5/14/2015***
- ☒ **Copy and Proof of County and Municipal Notifications**
- ☒ **Permit Fees**
- ☒ **Addendum A:** Source Applicable Requirements (only applicable to existing Title V facility)

Certification of Truth, Accuracy and Completeness by a Responsible Official

I, ***Jeffrey K. Warmann***, certify under penalty of law in 18 Pa. C. S. A. §4904, and 35 P.S. §4009(b) (2) that based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate and complete.

(Signature): _____ Date: 9/14/2015

Name (Print): ***Jeffrey K. Warmann*** Title: ***CEO and President***

OFFICIAL USE ONLY

Application No. _____ Unit ID _____ Site ID _____

DEP Client ID #: _____ APS. ID _____ AUTH. ID _____

Date Received _____ Date Assigned _____ Reviewed By _____

Date of 1st Technical Deficiency _____ Date of 2nd Technical Deficiency _____

Comments: _____

Section B - Processes Information

1. Source Information

Source Description (give type, use, raw materials, product, etc). Attach additional sheets as necessary.

Cooling Tower with two (2) cells for cooling of reactor effluent stream and the ULSG product cooler.

Manufacturer	Model No.	Number of Sources
Cooling Tower Depot	***N/A***	***1***
Source Designation	Maximum Capacity	Rated Capacity
ULSG Cooling Tower	***10,200 gpm***	***10,200 gpm***

Type of Material Processed
Cooling water

Maximum Operating Schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	***7***	***365***	***8,760***

Operational restrictions existing or requested, if any (e.g., bottlenecks or voluntary restrictions to limit PTE)
N/A

Capacity (specify units)

Per Hour	Per Day	Per Week	Per Year

Operating Schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	***7***	***365***	***8,760***

Seasonal variations (Months) From ***N/A*** to

If variations exist, describe them
N/A

2. Fuel – *N/A*

Type	Quantity Hourly	Annually	Sulfur	% Ash (Weight)	BTU Content
Oil Number _____	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Oil Number _____	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Natural Gas	SCFH	X 10^6 SCF	grain/100 SCF		Btu/SCF
Gas (other) _____	SCFH	X 10^6 SCF	grain/100 SCF		Btu/SCF
Coal _____	TPH	Tons	% by wt		Btu/lb
Other * _____					
_____					
_____					

*Note: Describe and furnish information separately for other fuels in Addendum B.

Section B - Processes Information (Continued)

3. Burner – *N/A*

Manufacturer	Type and Model No.	Number of Burners

Description:

Rated Capacity	Maximum Capacity

4. Process Storage Vessels – *N/A*

A. For Liquids:

Name of material stored

Tank I.D. No.	Manufacturer	Date Installed

Maximum Pressure	Capacity (gallons/Meter^3)

Type of relief device (pressure set vent/conservation vent/emergency vent/open vent)

Relief valve/vent set pressure (psig)	Vapor press. of liquid at storage temp. (psia/kPa)

Type of Roof: Describe:

Total Throughput Per Year	Number of fills per day (fill/day): Filling Rate (gal./min.): Duration of fill hr./fill):

B. For Solids – *N/A*

Type: ☐ Silo ☐ Storage Bin ☐Other, Describe	Name of Material Stored

Silo/Storage Bin I.D. No.	Manufacturer	Date Installed

State whether the material will be stored in loose or bags in silos	Capacity (Tons)

Turn over per year in tons	Turn over per day in tons

Describe fugitive dust control system for loading and handling operations

Describe material handling system

5. Request for Confidentiality

Do you request any information on this application to be treated as "Confidential"? ☐ Yes ☒ No
If yes, include justification for confidentiality. Place such information on separate pages marked **"confidential"**.

Section B - Processes Information (Continued)

6. Miscellaneous Information

Attach flow diagram of process giving all (gaseous, liquid and solid) flow rates. Also, list all raw materials charged to process equipment, and the amounts charged (tons/hour, etc.) at rated capacity (give maximum, minimum and average charges describing fully expected variations in production rates). Indicate (on diagram) all points where contaminants are controlled (location of water sprays, collection hoods, or other pickup points, etc.). Describe collection hoods location, design, airflow and capture efficiency. Describe any restriction requested and how it will be monitored.

A typical cooling tower flow diagram has been attached as Figure B-1.

Describe fully the facilities provided to monitor and to record process operating conditions, which may affect the emission of air contaminants. Show that they are reasonable and adequate.

See Attachment B, Addendum A and Addendum 1.

Describe each proposed modification to an existing source.

N/A

Identify and describe all fugitive emission points, all relief and emergency valves and any by-pass stacks.

N/A

Describe how emissions will be minimized especially during start up, shut down, process upsets and/or disruptions.

A drift eliminator will be incorporated into the design of each cooling tower cell to decrease the amount and size of drift droplets formed within the cooling tower system.

Anticipated Milestones:

i. Expected commencement date of construction/reconstruction/installation: ***2Q2016***
ii. Expected completion date of construction/reconstruction/installation: ***2Q2017***
iii. Anticipated date of start-up: ***2Q2017***

Section C - Air Cleaning Device

1. Precontrol Emissions* – *Not Available*

Pollutant	Maximum Emission Rate				Calculation/ Estimation Method
	Specify Units	Pounds/Hour	Hours/Year	Tons/Year	
PM					
PM_{10}					
SO_x					
CO					
NO_x					
VOC					
Others: (e.g., HAPs)	-----	-----	-----	-----	-----

* These emissions must be calculated based on the requested operating schedule and/or process rate, e.g., operating schedule for maximum limits or restricted hours of operation and/or restricted throughput. Describe how the emission values were determined. Attach calculations.

2. Gas Cooling – *N/A*

Water quenching ☐ Yes ☐ No Water injection rate _____ GPM

Radiation and convection cooling ☐ Yes ☐ No	Air dilution ☐ Yes ☐ No If yes,_____CFM
Forced Draft ☐ Yes ☐ No	Water cooled duct work ☐ Yes ☐ No
Other	
Inlet Volume _____ACFM @_____°F _____% Moisture	Outlet Volume _____ACFM @_____°F _____% Moisture

Describe the system in detail.

Section C - Air Cleaning Device (Continued)

3. Settling Chambers – *N/A*

Manufacturer	Volume of gas handled _____ACFM @_____°F	Gas velocity (ft/sec.)

Length of chamber (ft.)	Width of chamber (ft.)	Height of chamber (ft.)	Number of trays

Water injection ☐ Yes ☐ No	Water injection rate (GPM)

Emissions Data

Inlet	Outlet	Removal Efficiency (%)

4. Inertial and Cyclone Collectors – *N/A*

Manufacturer	Type	Model No.
Pressure drop (in. of water)	Inlet volume_____ACFM @_____°F	Outlet volume_____ACFM @_____°F

Number of individual cyclone(s)	Outlet straightening vanes used? ☐ Yes ☐ No

Length of Cyclone(s) Cylinder (ft.)	Diameter of Cyclone(s) Cylinder (ft.)	Length of Cyclone(s) cone (ft.)

Inlet Diameter (ft.) or duct area ($ft.^2$) of cyclone(s)	Outlet Diameter (ft.) or duct area ($ft.^2$) of cyclone(s)

If a multi-clone or multi-tube unit is installed, will any of the individual cyclones or cyclone tubes be blanked or blocked off?

Describe any exhaust gas recirculation loop to be employed.

Attach particle size efficiency curve

Emissions Data

Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

5. Fabric Collector – *N/A*

Equipment Specifications

Manufacturer	Model No.	☐ Pressurized Design ☐ Suction Design
Number of Compartments	Number of Filters Per Compartment	Is Baghouse Insulated? ☐ Yes ☐ No

Can each compartment be isolated for repairs and/or filter replacement? ☐ Yes ☐ No

Are temperature controls provided? (Describe in detail) ☐ Yes ☐ No

Dew point at maximum moisture_____°F | Design inlet volume_____ SCFM

Type of Fabric

Material _____ ☐ Felted ☐ Membrane

Weight _____ oz/sq.yd ☐ Woven ☐ Others: List:_____

Thickness _____in ☐ Felted-Woven

Fabric permeability (clean) @ ½" water-Δ P _____ CFM/sq.ft.

Filter dimensions Length_____ Diameter/Width _____

Effective area per filter_____ | Maximum operating temperature (°F)_____

Effective air to cloth ratio Minimum_____ Maximum_____

Drawing of Fabric Filter

A sketch of the fabric filter showing all access doors, catwalks, ladders and exhaust ductwork, location of each pressure and temperature indicator should be attached.

Operation and Cleaning

Volume of gases handled _____ ACFM @_____°F	Pressure drop across collector (in. of water). Describe the equipment to be used to monitor the pressure drop.

Type of filter cleaning

☐ Manual Cleaning ☐ Bag Collapse ☐ Reverse Air Jets

☐ Mechanical Shakers ☐ Sonic Cleaning ☐ Other:_____

☐ Pneumatic Shakers ☐ Reverse Air Flow

Describe the equipment provided if dry oil free air is required for collector operation

Cleaning Initiated By

☐ Timer Frequency if timer actuated_____

☐ Expected pressure drop range_____ in. of water ☐ Other Specify_____

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when the unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

6. Wet Collection Equipment – *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Relative Particulate/Gas Velocity (ejector scrubbers only)

Describe the internal features (e.g., variable throat, gas/liquid diffusion plates, spray nozzles, liquid redistributors, bed limiters, etc.).

Describe pH monitoring and pH adjustment systems, if applicable.

Describe mist eliminator or separator (type, configuration, backflush capability, frequency).

Attach particulate size efficiency curve.

Operating Parameters

Inlet volume of gases handled_____ (ACFM) @_____°F	Outlet volume of gases handled_____ (ACFM) @_____ °F_____% Moisture

Liquid flow rates. Describe equipment provided to measure liquid flow rates to scrubber (e.g., quenching section, recirculating solution, makeup water, bleed flow, etc.)

Describe scrubber liquid supply system (amount of make-up and recirculating liquid, capacity of recirculating liquid system, etc.)

State pressure drop range (in water) across scrubber (e.g., venturi throat, packed bed, etc.) only. Describe the equipment provide to measure the pressure drop. Do not include duct or de-mister losses.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

7. Electrostatic Precipitator – *N/A*

Equipment Specifications

Manufacturer	Model No.	☐ Wet ☐ Dry ☐ Single-Stage ☐ Two-Stage

Gas distribution grids ☐ Yes ☐ No	Design Inlet Volume (SCFM)_____ Maximum operating temperature (°F)_____

Total collecting surface area_____ sq. ft. Collector plates size length_____ ft. x width_____ ft.

Number of fields_____ Number of collector plates/field_____

Spacing between collector plates_____ inches.

Maximum gas velocity_____ ft./sec. Minimum gas treatment time:_____ sec.

Total discharge electrode length_____ ft.

Number of discharge electrodes_____ Number of collecting electrode rappers_____

Rapper control ☐ Magnetic ☐ Pneumatic ☐ Other _____ Describe in detail

Operating Parameters

Inlet gas temperature (°F)_____ Outlet gas temperature (°F)_____	State pressure drop range (inches water gauge) across collector only_____ Describe the equipment
Volume of gas handled (ACFM)_____	Dust resistivity (ohm-cm). Will resistivity vary?

Power requirements

Number and size of Transformer Rectifier sets by electrical field

Field No.	No. of Sets	Each Transformer KVA	Each Rectifier KV Ave./Peak	Each Rectifier Ma DC

Current Density	Corona Power	Corona Power Density
_____ Micro amperes/ft^2.	_____ Watts/1000 ACFM	_____ Watts/ft^2.

Will a flue gas conditioning system be employed? If yes, describe it.

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

8. Adsorption Equipment – *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Adsorbent charge per adsorber vessel and number of adsorber vessels

Length of Mass Transfer Zone (MTZ), supplied by the manufacturer based upon laboratory data.

Adsorber diameter (ft.) and area ft^2.)	Adsorption bed depth (ft.)

Adsorbent information

Adsorbent type and physical properties.

Working capacity of adsorbent (%)	Heel percent or unrecoverable solvent weight % in the adsorbent after regeneration.

Operating Parameters

Inlet volume of gases handled_____ (ACFM) @_____ °F

Adsorption time per adsorption bed	Breakthrough capacity: Lbs. of solvent / 100 lbs. of adsorbent = _____
Vapor pressure of solvents at the inlet temperature	Available steam in pounds to regenerate carbon adsorber (if applicable)

Percent relative saturation of each solvent at the inlet temperature

Attach any additional data including auxiliary equipment and operation details to thoroughly evaluate the control equipment.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

9. Absorption Equipment – *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Tower height (ft.) and inside diameter (ft.)
Packing type and size (if applicable)	Height of packing (ft.) (if applicable)
Number of trays (if applicable)	Number of bubble caps (if applicable)

Configuration

☐ Counter-current ☐ Cross flow ☐ Cocurrent flow

Describe pH and/or other monitoring and controls.

Absorbent information

Absorbent type and concentration.	Retention time (sec.)

Attach equilibrium data for absorption (if applicable)

Attach any additional information regarding auxiliary equipment, absorption solution supply system (once through or recirculating, system capacity, etc.) to thoroughly evaluate the control equipment. Indicate the flow rates for makeup, bleed and recirculation.

Operating Parameters

Volume of gas handled (ACFM)	Inlet temperature (°F)	Pressure drop (in. of water) and liquid flow rate. Describe the monitoring equipment.

State operating range for pH and/or absorbent concentration in scrubber liquid.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

10. ☐ **Selective Catalytic Reduction (SCR) – *N/A***
☐ **Selective Non-Catalytic Reduction (SNCR) – *N/A***
☐ **Non-Selective Catalytic Reduction (NSCR) – *N/A***

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Design operating temperature (°F)

Is the system equipped with process controls for proper mixing/control of the reducing agent in gas stream? If yes, give details.

Attach efficiency and other pertinent information (e.g., ammonia slip)

Operating Parameters

Volume of gases handled_____ (ACFM) @_____ °F

Operating temperature range for the SCR/SNCR/NSCR system (°F) From_____°F To_____°F

Reducing agent used, if any	Oxidation catalyst used, if any

State expected range of usage rate and concentration.

Service life of catalyst	Ammonia slip (ppm)

Describe fully with a sketch giving locations of equipment, controls systems, important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

11. Oxidizer/Afterburners – *N/A*

Equipment Specifications

Manufacturer	Type ☐ Thermal ☐ Catalytic	Model No.
Design Inlet Volume (SCFM)	Combustion chamber dimensions (length, cross-sectional area, effective chamber volume, etc.)	
Describe design features, which will ensure mixing in combustion chamber.		
Describe method of preheating incoming gases (if applicable).	Describe heat exchanger system used for heat recovery (if applicable).	

Catalyst used	Life of catalyst	Expected temperature rise across catalyst (°F)	Dimensions of bed (in inches). Height:_____ Diameter or Width:_____ Depth:_____

Are temperature sensing devices being provided to measure the temperature rise across the catalyst? ☐ Yes ☐ No

If yes, describe.

Describe any temperature sensing and/or recording devices (including specific location of temperature probe in a drawing or sketch.

Burner Information

Burner Manufacturer	Model No.	Fuel Used
Number and capacity of burners	Rated capacity (each)	Maximum capacity (each)
Describe the operation of the burner	Attach dimensioned diagram of afterburner	

Operating Parameters

Inlet flow rate (ACFM)_____ @ _____°F	Outlet flow rate (ACFM)_____@ _____°F
State pressure drop range across catalytic bed (in. of water).	Describe the method adopted for regeneration or disposal of the used catalyst.
Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.	

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

12. Flares – *N/A*

Equipment Specifications

Manufacturer	Type ☐ Elevated flare ☐ Ground flare ☐ Other_____ Describe	Model No.
Design Volume (SCFM)	Dimensions of stack (ft.) Diameter_____ Height_____	
Residence time (sec.) and outlet temperature (°F)	Turn down ratio	Burner details

Describe the flare design (air/steam-assisted or nonassisted), essential auxiliaries including pilot flame monitor of proposed flare with a sketch.

Describe the operation of the flare's ignition system.

Describe the provisions to introduce auxiliary fuel to the flare.

Operation Parameters

Detailed composition of the waste gas	Heat content	Exit velocity
Maximum and average gas flow burned (ACFM)	Operating temperature (°F)	

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

13. Other Control Equipment

Equipment Specifications

Manufacturer	Type	Model No.
Cooling Tower Depot or equivalent	***Cellular PVC Drift Eliminators or Equivalent***	***N/A***

Design Volume (SCFM)	Capacity
~1,000,000 scfm per cell	***N/A***

Describe pH monitoring and pH adjustment, if any.

N/A

Indicate the liquid flow rate and describe equipment provided to measure pressure drop and flow rate, if any.

N/A

Attach efficiency curve and/or other efficiency information.

N/A

Attach any additional date including auxiliary equipment and operation details to thoroughly evaluate the control equipment.

N/A

Operation Parameters

Volume of gas handled

~1,000,000 (per cell) ACFM @ ***ambient*** °F ***saturated*** % Moisture

Describe fully giving important parameters and method of operation.

N/A

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

N/A

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

See Attachment C – Emission Inventory

Section C - Air Cleaning Device (Continued)

14. Costs

Indicate cost associated with air cleaning device and its operating cost (attach documentation if necessary)

Device	Direct Cost	Indirect Cost	Total Cost	Annual Operating Cost
Drift Eliminators	***TBD***	***TBD***	***TBD***	***TBD***

15. Miscellaneous

Describe in detail the removal, handling and disposal of dust, effluent, etc. from the air cleaning device including proposed methods of controlling fugitive emissions.

N/A

Attach manufacturer's performance guarantees and/or warranties for each of the major components of the control system (or complete system).

Vendor guarantee of 0.0005% drift rate.

Attach the maintenance schedule for the control equipment and any part of the process equipment that if in disrepair would increase air contaminant emissions.

The Refinery will develop a maintenance schedule in accordance with manufacturer's recommendations.

Section B - Processes Information

1. Source Information –*Fugitive Emissions from New Components*

Source Description (give type, use, raw materials, product, etc). Attach additional sheets as necessary.

Fugitive emissions from new components such as valves, flanges, connectors, and pumps, etc., associated with the proposed project.

Manufacturer	Model No.	Number of Sources
N/A	***N/A***	***1***
Source Designation	Maximum Capacity	Rated Capacity
N/A	***N/A***	***N/A***

Type of Material Processed

Cooling water, refinery fuel gas, and process vapors and liquids associated with the ULSG project.

Maximum Operating Schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	***7***	***365***	***8,760***

Operational restrictions existing or requested, if any (e.g., bottlenecks or voluntary restrictions to limit PTE)

Capacity (specify units)

Per Hour	Per Day	Per Week	Per Year
N/A	***N/A***	***N/A***	***N/A***

Operating Schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
N/A	***N/A***	***N/A***	***N/A***

Seasonal variations (Months) From ***N/A*** to

If variations exist, describe them

N/A

2. Fuel – *N/A*

Type	Quantity Hourly	Annually	Sulfur	% Ash (Weight)	BTU Content
Oil Number ***N/A***	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Oil Number ***N/A***	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Natural Gas ***N/A***	SCFH	X 10^6 SCF	grain/100 SCF		Btu/SCF
Gas (other) ***N/A***	*SCFH*	*X 10^6 SCF*	grain/100 SCF		Btu/SCF
Coal ***N/A***	TPH	Tons	% by wt		Btu/lb
Other * ***N/A***					

*Note: Describe and furnish information separately for other fuels in Addendum B.

Section B - Processes Information (Continued)

3. Burner – *N/A*

Manufacturer	Type and Model No.	Number of Burners

Description:

Rated Capacity	Maximum Capacity

4. Process Storage Vessels

A. For Liquids – *N/A*

Name of material stored

Tank I.D. No.	Manufacturer	Date Installed

Maximum Pressure	Capacity (gallons/Meter^3)

Type of relief device (pressure set vent/conservation vent/emergency vent/open vent)

Relief valve/vent set pressure (psig)	Vapor press. of liquid at storage temp. (psia/kPa)

Type of Roof: Describe:

Total Throughput Per Year	Number of fills per day (fill/day): Filling Rate (gal./min.): Duration of fill hr./fill):

B. For Solids – *N/A*

Type: ☐ Silo ☐ Storage Bin ☐Other, Describe	Name of Material Stored

Silo/Storage Bin I.D. No.	Manufacturer	Date Installed

State whether the material will be stored in loose or bags in silos	Capacity (Tons)

Turn over per year in tons	Turn over per day in tons

Describe fugitive dust control system for loading and handling operations

Describe material handling system

5. Request for Confidentiality

Do you request any information on this application to be treated as "Confidential"? ☐ Yes ☒ No
If yes, include justification for confidentiality. Place such information on separate pages marked **"confidential"**.

Section B - Processes Information (Continued)

6. Miscellaneous Information

Attach flow diagram of process giving all (gaseous, liquid and solid) flow rates. Also, list all raw materials charged to process equipment, and the amounts charged (tons/hour, etc.) at rated capacity (give maximum, minimum and average charges describing fully expected variations in production rates). Indicate (on diagram) all points where contaminants are controlled (location of water sprays, collection hoods, or other pickup points, etc.). Describe collection hoods location, design, airflow and capture efficiency. Describe any restriction requested and how it will be monitored.

See Attachment A – Application Narrative

Describe fully the facilities provided to monitor and to record process operating conditions, which may affect the emission of air contaminants. Show that they are reasonable and adequate.

The proposed fugitive components will be incorporated into the Refinery's existing alternative monitoring plan as per 40 CFR Part 63, Subpart CC.

Describe each proposed modification to an existing source.

N/A

Identify and describe all fugitive emission points, all relief and emergency valves and any by-pass stacks.

See Attachment A – Application Narrative

Describe how emissions will be minimized especially during start up, shut down, process upsets and/or disruptions.

The proposed fugitive components will be incorporated into the Refinery's existing alternative monitoring plan as per 40 CFR Part 63, Subpart CC.

Anticipated Milestones:

i. Expected commencement date of construction/reconstruction/installation: ***2Q2016***
ii. Expected completion date of construction/reconstruction/installation: ***2Q2017***
iii. Anticipated date of start-up: ***2Q2017***

Section C - Air Cleaning Device

1. Precontrol Emissions* – *Not Available*

Pollutant	Maximum Emission Rate				Calculation/ Estimation Method
	Specify Units	Pounds/Hour	Hours/Year	Tons/Year	
PM					
PM_{10}					
SO_x					
CO					
NO_x					
VOC					
Others: (e.g., HAPs)					

* These emissions must be calculated based on the requested operating schedule and/or process rate, e.g., operating schedule for maximum limits or restricted hours of operation and/or restricted throughput. Describe how the emission values were determined. Attach calculations.

2. Gas Cooling – *N/A*

Water quenching ☐ Yes ☐ No Water injection rate _____ GPM

Radiation and convection cooling ☐ Yes ☐ No	Air dilution ☐ Yes ☐ No If yes, _____CFM
Forced Draft ☐ Yes ☐ No	Water cooled duct work ☐ Yes ☐ No
Other	
Inlet Volume _____ACFM @ _____°F _____% Moisture	Outlet Volume _____ACFM @ _____°F _____% Moisture

Describe the system in detail.

Section C - Air Cleaning Device (Continued)

3. Settling Chambers – *N/A*

Manufacturer	Volume of gas handled _____ACFM @_____°F	Gas velocity (ft/sec.)

Length of chamber (ft.)	Width of chamber (ft.)	Height of chamber (ft.)	Number of trays

Water injection ☐ Yes ☐ No	Water injection rate (GPM)

Emissions Data

Inlet	Outlet	Removal Efficiency (%)

4. Inertial and Cyclone Collectors – *N/A*

Manufacturer	Type	Model No.
Pressure drop (in. of water)	Inlet volume_____ACFM @_____°F	Outlet volume_____ACFM @_____°F

Number of individual cyclone(s)	Outlet straightening vanes used? ☐ Yes ☐ No

Length of Cyclone(s) Cylinder (ft.)	Diameter of Cyclone(s) Cylinder (ft.)	Length of Cyclone(s) cone (ft.)

Inlet Diameter (ft.) or duct area (ft.^{2}) of cyclone(s)	Outlet Diameter (ft.) or duct area (ft.^{2}) of cyclone(s)

If a multi-clone or multi-tube unit is installed, will any of the individual cyclones or cyclone tubes be blanked or blocked off?

Describe any exhaust gas recirculation loop to be employed.

Attach particle size efficiency curve

Emissions Data

Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

5. Fabric Collector – *N/A*

Equipment Specifications

Manufacturer	Model No.	☐ Pressurized Design ☐ Suction Design
Number of Compartments	Number of Filters Per Compartment	Is Baghouse Insulated? ☐ Yes ☐ No

Can each compartment be isolated for repairs and/or filter replacement? ☐ Yes ☐ No

Are temperature controls provided? (Describe in detail) ☐ Yes ☐ No

Dew point at maximum moisture_____°F | Design inlet volume_____ SCFM

Type of Fabric

Material _____ ☐ Felted ☐ Membrane

Weight _____ oz/sq.yd ☐ Woven ☐ Others: List:_____

Thickness _____in ☐ Felted-Woven

Fabric permeability (clean) @ ½" water-Δ P _____ CFM/sq.ft.

Filter dimensions Length_____ Diameter/Width _____

Effective area per filter_____ | Maximum operating temperature (°F)_____

Effective air to cloth ratio Minimum_____ Maximum_____

Drawing of Fabric Filter

A sketch of the fabric filter showing all access doors, catwalks, ladders and exhaust ductwork, location of each pressure and temperature indicator should be attached.

Operation and Cleaning

Volume of gases handled _____ ACFM @_____°F	Pressure drop across collector (in. of water). Describe the equipment to be used to monitor the pressure drop.

Type of filter cleaning

☐ Manual Cleaning ☐ Bag Collapse ☐ Reverse Air Jets

☐ Mechanical Shakers ☐ Sonic Cleaning ☐ Other:_____

☐ Pneumatic Shakers ☐ Reverse Air Flow

Describe the equipment provided if dry oil free air is required for collector operation

Cleaning Initiated By

☐ Timer Frequency if timer actuated_____

☐ Expected pressure drop range_____ in. of water ☐ Other Specify_____

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when the unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

6. Wet Collection Equipment – *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Relative Particulate/Gas Velocity (ejector scrubbers only)

Describe the internal features (e.g., variable throat, gas/liquid diffusion plates, spray nozzles, liquid redistributors, bed limiters, etc.).

Describe pH monitoring and pH adjustment systems, if applicable.

Describe mist eliminator or separator (type, configuration, backflush capability, frequency).

Attach particulate size efficiency curve.

Operating Parameters

Inlet volume of gases handled_____ (ACFM) @_____°F	Outlet volume of gases handled_____ (ACFM) @_____ °F_____% Moisture

Liquid flow rates. Describe equipment provided to measure liquid flow rates to scrubber (e.g., quenching section, recirculating solution, makeup water, bleed flow, etc.)

Describe scrubber liquid supply system (amount of make-up and recirculating liquid, capacity of recirculating liquid system, etc.)

State pressure drop range (in water) across scrubber (e.g., venturi throat, packed bed, etc.) only. Describe the equipment provide to measure the pressure drop. Do not include duct or de-mister losses.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

7. Electrostatic Precipitator – *N/A*

Equipment Specifications

Manufacturer	Model No.	☐ Wet ☐ Dry ☐ Single-Stage ☐ Two-Stage

Gas distribution grids ☐ Yes ☐ No	Design Inlet Volume (SCFM)_____ Maximum operating temperature (°F)_____

Total collecting surface area_____ sq. ft. Collector plates size length_____ ft. x width_____ ft.

Number of fields_____ Number of collector plates/field_____

Spacing between collector plates_____ inches.

Maximum gas velocity_____ ft./sec. Minimum gas treatment time:_____ sec.

Total discharge electrode length_____ ft.

Number of discharge electrodes_____ Number of collecting electrode rappers_____

Rapper control ☐ Magnetic ☐ Pneumatic ☐ Other _____ Describe in detail

Operating Parameters

Inlet gas temperature (°F)_____ Outlet gas temperature (°F)_____	State pressure drop range (inches water gauge) across collector only_____ Describe the equipment
Volume of gas handled (ACFM)_____	Dust resistivity (ohm-cm). Will resistivity vary?

Power requirements

Number and size of Transformer Rectifier sets by electrical field

Field No.	No. of Sets	Each Transformer KVA	Each Rectifier KV Ave./Peak	Each Rectifier Ma DC

Current Density	Corona Power	Corona Power Density
_____ Micro amperes/ft^2.	_____ Watts/1000 ACFM	_____ Watts/ft^2.

Will a flue gas conditioning system be employed? If yes, describe it.

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

8. Adsorption Equipment – *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Adsorbent charge per adsorber vessel and number of adsorber vessels

Length of Mass Transfer Zone (MTZ), supplied by the manufacturer based upon laboratory data.

Adsorber diameter (ft.) and area ft^2.)	Adsorption bed depth (ft.)

Adsorbent information

Adsorbent type and physical properties.

Working capacity of adsorbent (%)	Heel percent or unrecoverable solvent weight % in the adsorbent after regeneration.

Operating Parameters

Inlet volume of gases handled_____ (ACFM) @_____ °F

Adsorption time per adsorption bed	Breakthrough capacity: Lbs. of solvent / 100 lbs. of adsorbent = _____
Vapor pressure of solvents at the inlet temperature	Available steam in pounds to regenerate carbon adsorber (if applicable)

Percent relative saturation of each solvent at the inlet temperature

Attach any additional data including auxiliary equipment and operation details to thoroughly evaluate the control equipment.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

9. Absorption Equipment – *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Tower height (ft.) and inside diameter (ft.)
Packing type and size (if applicable)	Height of packing (ft.) (if applicable)
Number of trays (if applicable)	Number of bubble caps (if applicable)

Configuration

☐ Counter-current ☐ Cross flow ☐ Cocurrent flow

Describe pH and/or other monitoring and controls.

Absorbent information

Absorbent type and concentration.	Retention time (sec.)

Attach equilibrium data for absorption (if applicable)

Attach any additional information regarding auxiliary equipment, absorption solution supply system (once through or recirculating, system capacity, etc.) to thoroughly evaluate the control equipment. Indicate the flow rates for makeup, bleed and recirculation.

Operating Parameters

Volume of gas handled (ACFM)	Inlet temperature (°F)	Pressure drop (in. of water) and liquid flow rate. Describe the monitoring equipment.

State operating range for pH and/or absorbent concentration in scrubber liquid.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

10. ☐ **Selective Catalytic Reduction (SCR) – *N/A***
☐ **Selective Non-Catalytic Reduction (SNCR) – *N/A***
☐ **Non-Selective Catalytic Reduction (NSCR) – *N/A***

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Design operating temperature (°F)

Is the system equipped with process controls for proper mixing/control of the reducing agent in gas stream? If yes, give details.

Attach efficiency and other pertinent information (e.g., ammonia slip)

Operating Parameters

Volume of gases handled_____ (ACFM) @_____ °F

Operating temperature range for the SCR/SNCR/NSCR system (°F) From_____°F To_____°F

Reducing agent used, if any	Oxidation catalyst used, if any

State expected range of usage rate and concentration.

Service life of catalyst	Ammonia slip (ppm)

Describe fully with a sketch giving locations of equipment, controls systems, important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

11. Oxidizer/Afterburners – *N/A*

Equipment Specifications

Manufacturer	Type ☐ Thermal ☐ Catalytic	Model No.
Design Inlet Volume (SCFM)	Combustion chamber dimensions (length, cross-sectional area, effective chamber volume, etc.)	
Describe design features, which will ensure mixing in combustion chamber.		
Describe method of preheating incoming gases (if applicable).	Describe heat exchanger system used for heat recovery (if applicable).	

Catalyst used	Life of catalyst	Expected temperature rise across catalyst (°F)	Dimensions of bed (in inches). Height:_____ Diameter or Width:_____ Depth:_____

Are temperature sensing devices being provided to measure the temperature rise across the catalyst? ☐ Yes ☐ No

If yes, describe.

Describe any temperature sensing and/or recording devices (including specific location of temperature probe in a drawing or sketch.

Burner Information

Burner Manufacturer	Model No.	Fuel Used
Number and capacity of burners	Rated capacity (each)	Maximum capacity (each)
Describe the operation of the burner	Attach dimensioned diagram of afterburner	

Operating Parameters

Inlet flow rate (ACFM)_____ @ _____°F	Outlet flow rate (ACFM)_____@ _____°F
State pressure drop range across catalytic bed (in. of water).	Describe the method adopted for regeneration or disposal of the used catalyst.
Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.	

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

12. Flares – *N/A*

Equipment Specifications

Manufacturer	Type ☐ Elevated flare ☐ Ground flare ☐ Other_____ Describe	Model No.
Design Volume (SCFM)	Dimensions of stack (ft.) Diameter_____ Height_____	
Residence time (sec.) and outlet temperature (°F)	Turn down ratio	Burner details

Describe the flare design (air/steam-assisted or nonassisted), essential auxiliaries including pilot flame monitor of proposed flare with a sketch.

Describe the operation of the flare's ignition system.

Describe the provisions to introduce auxiliary fuel to the flare.

Operation Parameters

Detailed composition of the waste gas	Heat content	Exit velocity
Maximum and average gas flow burned (ACFM)	Operating temperature (°F)	

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

13. Other Control Equipment – *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Volume (SCFM)	Capacity

Describe pH monitoring and pH adjustment, if any.

Indicate the liquid flow rate and describe equipment provided to measure pressure drop and flow rate, if any.

Attach efficiency curve and/or other efficiency information.

Attach any additional date including auxiliary equipment and operation details to thoroughly evaluate the control equipment.

Operation Parameters

Volume of gas handled

ACFM @ °F % Moisture

Describe fully giving important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

14. Costs

Indicate cost associated with air cleaning device and its operating cost (attach documentation if necessary)

Not available

Device	Direct Cost	Indirect Cost	Total Cost	Annual Operating Cost
N/A				

15. Miscellaneous

Describe in detail the removal, handling and disposal of dust, effluent, etc. from the air cleaning device including proposed methods of controlling fugitive emissions.

N/A

Attach manufacturer's performance guarantees and/or warranties for each of the major components of the control system (or complete system).

N/A

Attach the maintenance schedule for the control equipment and any part of the process equipment that if in disrepair would increase air contaminant emissions.

The Refinery will develop a maintenance schedule in accordance with manufacture recommendations.

Section D - Additional Information

Will the construction, modification, etc. of the sources covered by this application increase emissions from other sources at the facility? If so, describe and quantify.

See Attachment C – Emissions Inventory.

If this project is subject to any one of the following, attach a demonstration to show compliance with applicable standards.

a. Prevention of Significant Deterioration permit (PSD), 40 CFR 52?	☐ YES	☒ NO
b. New Source Review (NSR), 25 Pa. Code Chapter 127, Subchapter E?	☒ YES	☐ NO
c. New Source Performance Standards (NSPS), 40 CFR Part 60? (If Yes, which subpart) ***GGGa***	☒ YES	☐ NO
d. National Emissions Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61? (If Yes, which subpart) _____	☐ YES	☒ NO
e. Maximum Achievable Control Technology (MACT) 40 CFR Part 63? (If Yes, which part) ***CC***	☒ YES	☐ NO

Attach a demonstration showing that the emissions from any new sources will be the minimum attainable through the use of best available technology (BAT).

See Attachment A – Application Narrative.

Provide emission increases and decreases in allowable (or potential) and actual emissions within the last five (5) years for applicable PSD pollutant(s) if the facility is an existing major facility (PSD purposes).

See Attachment C – Emissions Inventory.

Section D - Additional Information (Continued)

Indicate emission increases and decreases in tons per year (tpy), for volatile organic compounds (VOCs) and nitrogen oxides (NOx) for NSR applicability since January 1, 1991 or other applicable dates (see other applicable dates in instructions). The emissions increases include all emissions including stack, fugitive, material transfer, other emission generating activities, quantifiable emissions from exempted source(s), etc.

Permit number (if applicable)	Date issued	Indicate ***Yes*** or ***No*** if emission increases and decreases were used previously for netting	Source I. D. or Name	VOCs		NOx	
				Emission increases in potential to emit (tpy)	Creditable emission decreases in actual emissions (tpy)	Emission increases in potential to emit (tpy)	Creditable emission decreases in actual emissions (tpy)

See Attachment C – Emissions Inventory.

If the source is subject to 25 Pa. Code Chapter 127, Subchapter E, New Source Review requirements,

See Attachment A – Application Narrative

a. Identify Emission Reduction Credits (ERCs) for emission offsets or demonstrate ability to obtain suitable ERCs for emission offsets.

b. Provide a demonstration that the lowest achievable emission rate (LAER) control techniques will be employed (if applicable).

c. Provide an analysis of alternate sites, sizes, production processes and environmental control techniques demonstrating that the benefits of the proposed source outweigh the environmental and social costs (if applicable).

Attach calculations and any additional information necessary to thoroughly evaluate compliance with all the applicable requirements of Article III and applicable requirements of the Clean Air Act adopted thereunder The Department may request additional information to evaluate the application such as a standby plan, a plan for air pollution emergencies, air quality modeling, etc. ***See Attachment C – Emissions Inventory.***

Section E - Compliance Demonstration – *N/A*

Note: Complete this section if source is not a Title V facility. Title V facilities must complete Addendum A.

Method of Compliance Type: Check all that apply and complete all appropriate sections below

☐ Monitoring ☐ Testing ☐ Reporting

☐ Recordkeeping ☐ Work Practice Standard

Monitoring:

a. Monitoring device type (Parameter, CEM, etc):

b. Monitoring device location:

c. Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Testing:

a. Reference Test Method: Citation

b. Reference Test Method: Description

Recordkeeping:

Describe what parameters will be recorded and the recording frequency:

Reporting:

a. Describe what is to be reported and frequency of reporting:

b. Reporting start date:_____

Work Practice Standard:

Describe each:

Section F - Flue and Air Contaminant Emission

1. Estimated Atmospheric Emissions*

Pollutant	Maximum emission rate			Calculation/ Estimation Method
	specify units	lbs/hr	tons/yr.	
PM				
PM_{10}				
SO_x				
CO				
NO_x				
VOC				
Others: (e.g., HAPs)	-----	-----	-----	-----

See Attachment C – Emissions Inventory.

* These emissions must be calculated based on the requested operating schedule and/or process rate e.g., operating schedule for maximum limits or restricted hours of operation and /or restricted throughput. Describe how the emission values were determined. Attach calculations.

2. Stack and Exhauster

Stack Designation/Number ***TBD***

List Source(s) or source ID exhausted to this stack:	% of flow exhausted to stack:
Cooling Tower	***100***

Stack height above grade (ft.) ***~24 ft*** Grade elevation (ft.) ***~ 10 ft***	Stack diameter (ft) or Outlet duct area (sq. ft.) ***Two (2) stacks @ ~ 24 feet each***	f. Weather Cap ☐ YES ☒ NO

Distance of discharge to nearest property line (ft.). Locate on topographic map.

~600 – 1,000 ft

Does stack height meet Good Engineering Practice (GEP)?

N/A

If modeling (estimating) of ambient air quality impacts is needed, attach a site plan with buildings and their dimensions and other obstructions. ***N/A***

Location of stack** Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

Stack exhaust

Volume ***~2,000,000*** ACFM Temperature ***85*** °F Moisture ***saturated*** %

Indicate on an attached sheet the location of sampling ports with respect to exhaust fan, breeching, etc. Give all necessary dimensions.

N/A

Exhauster (attach fan curves) ***N/A*** in. of water ***N/A*** HP @ ***N/A*** RPM.

** If the data and collection method codes differ from those provided on the General Information Form-Authorization Application, provide the additional detail required by that form on a separate form.

2. Stack and Exhauster

Stack Designation/Number ***New Fugitive Components***

List Source(s) or source ID exhausted to this stack: ***Pipes, valves, flanges, connectors, pumps, etc.***	% of flow exhausted to stack: ***0%***

Stack height above grade (ft.) ***N/A*** Grade elevation (ft.) ***N/A***	Stack diameter (ft) or Outlet duct area (sq. ft.) ***N/A***	f. Weather Cap – ***N/A*** ☐ YES ☐ NO

Distance of discharge to nearest property line (ft.). Locate on topographic map.

TBD

Does stack height meet Good Engineering Practice (GEP)?

N/A

If modeling (estimating) of ambient air quality impacts is needed, attach a site plan with buildings and their dimensions and other obstructions. ***N/A***

Location of stack** Latitude/Longitude	Latitude			Longitude		
Point of Origin	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Plant Entrance						

Stack exhaust

Volume ***N/A*** ACFM Temperature ***N/A*** °F Moisture ***N/A*** %

cate on an attached sheet the location of sampling ports with respect to exhaust fan, breeching, etc. Give all necessary dimensions.

N/A

Exhauster (attach fan curves) ***N/A*** in. of water ***N/A*** HP @ ***N/A*** RPM.

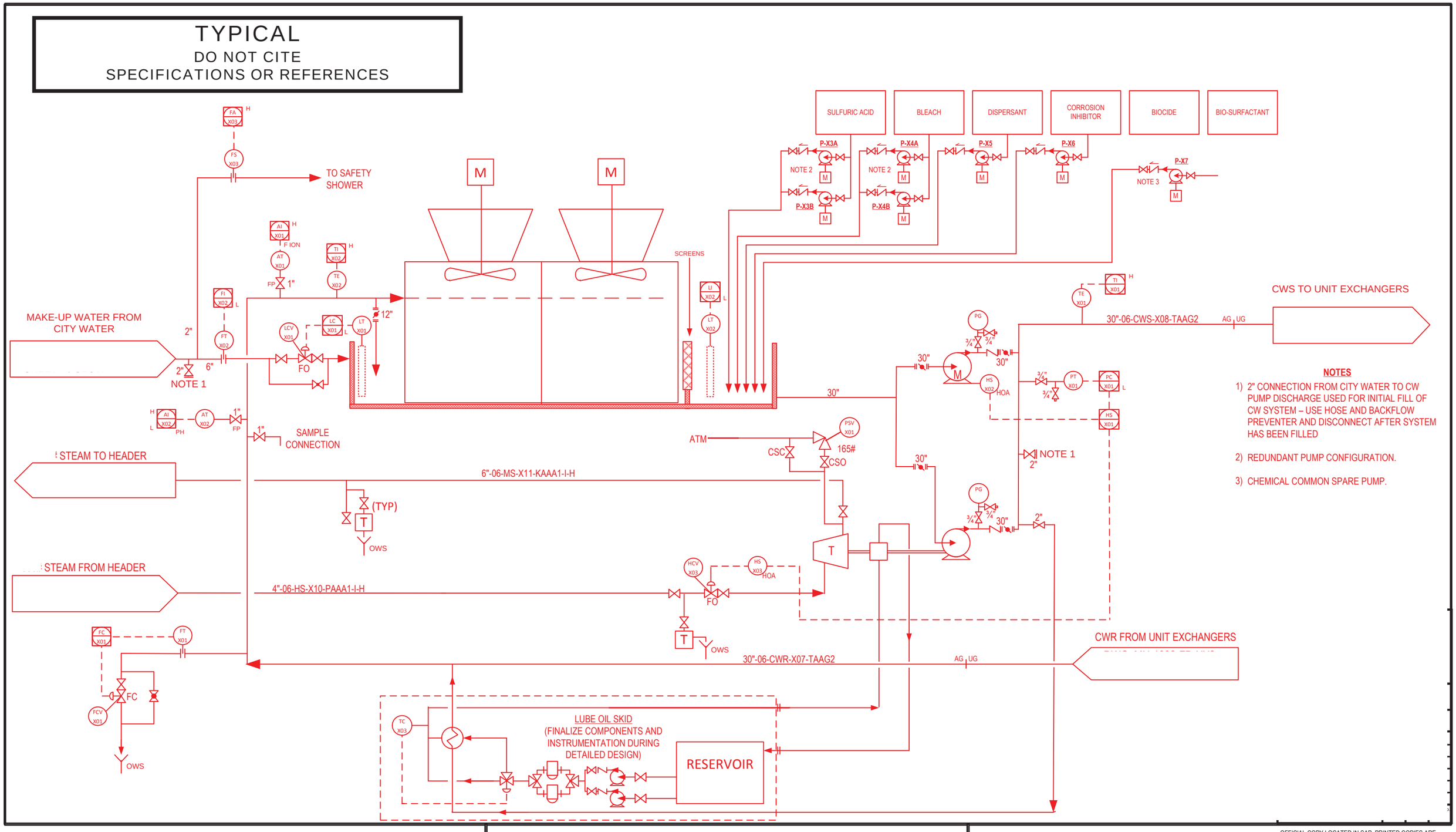
** If the data and collection method codes differ from those provided on the General Information Form-Authorization Application, provide the additional detail required by that form on a separate form.

Section G - Attachments

Number and list all attachments submitted with this application below:

Attachment A – Application Narrative
Attachment B – PADEP Application Forms
Attachment C – Emissions Inventory
Attachment D – Municipal Notification Letters
Attachment E – All4 Inc. Quality Seal

Figure B-1
Monroe Energy, LLC - Trainer, PA Refinery
Typical Cooling Tower Process Flow Diagram



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BUREAU OF AIR QUALITY

Addendum A: Source Applicable Requirements

Describe and cite all applicable requirements pertaining to this source.
Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Citation Number	Citation Limitation	Limitation Used
40 CFR §63.654(c)(1)	***The owner or operator must perform monitoring to identify leaks of total strippable volatile organic compounds (VOC) from each heat exchange system.***	*N/A*
25 Pa. Code §123.13(c)(1)(iii)	***Filterable PM from the proposed cooling tower may not exceed 0.02 grains per dry standard cubic foot.***	***PM limits as listed in §123.13(c)(1)(iii).***
25 Pa. Code §127.12(a)(5)	***Show that the emissions from a new source will be the minimum attainable through the use of the best available technology.***	***Use of drift eliminators with a drift rate of 0.0005% and LDAR monitoring.***

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Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** *Proposed Cooling Tower*

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §63.654(c)(1)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☒ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *Monthly Sampling*
2. **Monitoring device location:** *Return line*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Leaks of total strippable volatile organic compounds (VOCs) recorded monthly.

3. **How will data be reported:** *Semi-annual reports will be submitted per 40 CFR Part 63, Subpart CC.*

Section 3: Testing

1. Reference Test Method Description:	***Air Stripping Method (Modified El Paso Method) for Determination of Volatile Organic Compound Emissions from Water Sources***
2. Reference Test Method Citation:	***Texas Commission of Environmental Quality (TCEQ), Sampling Procedures Manual, Appendix P: Cooling Tower Monitoring Guidance.***

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

The date and concentration of strippable hydrocarbon when a leak is detected and the date and concentration of strippable hydrocarbon once the leak is repaired.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Periodic reporting submitted every six (6) months including any leaks that occurred, the concentration of strippable hydrocarbon before and after the leak is repaired, the date the leak was identified and the date it was repaired.

1. Reporting start date:	***Six (6) months after the date of the Notification of Compliance Status report is submitted***

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

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BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☐ **A group of sources, Group ID:**

☒ **A single source, Unit ID:** *Proposed Cooling Tower*

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §123.13(c)(1)(iii) and 25 Pa. Code §127.12(a)(5)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

4. **Monitoring device type (stack test, CEM, etc.):** *N/A*

5. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

6. How will data be reported:	*N/A*

Section 3: Testing

2. Reference Test Method Description:	*N/A*
3. Reference Test Method Citation:	*N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

1. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe Energy proposes to operate the proposed new cooling tower according to the manufacturer specifications.

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Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Cooling Towers*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §127.12(a)(5)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

7. **Monitoring device type (stack test, CEM, etc.):** *Sampling*

8. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Monroe Energy will monitor total dissolved solids (TDS) in the cooling tower water. The cooling water circulating rate is constant.

9. How will data be reported:	***N/A***

Section 3: Testing

4. Reference Test Method Description:	***Sampling and analysis of TDS in circulated water.***
5. Reference Test Method Citation:	***N/A***

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Monroe Energy proposes to maintain records of monthly TDS concentrations and the amount of water circulated through the proposed cooling tower.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

2. Reporting start date:	

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe Energy proposes to operate the proposed new cooling tower according to the manufacturer specifications.

2700-PM-AQ0021 Rev. 6/2004

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Submit in Triplicate

COMBUSTION UNIT

Application for Plan Approval to Construct, Modify or Reactivate an Air Contamination Source and/or Install an Air Cleaning Device

This application and the General Information Form (GIF) must be included in the submittal

Before completing this form, read the instructions provided with this form.

Section A - Facility Name, Checklist And Certification

Organization Name or Registered Fictitious Name/Facility Name: ***Monroe Energy, LLC – Trainer Refinery***

DEP Client ID# (If Known): ***296139***

Type of Review required and Fees:

- ☐ Source which is not subject to NSPS, NESHAPs, MACT, NSR and PSD: ..... $_____
- ☒ Source requiring approval under NSPS or NESHAPS or both: ..... $***1,700***
- ☒ Source requiring approval under NSR regulations: ..... $***5,300***
- ☐ Source requiring the establishment of a MACT limitation: ..... $_____
- ☐ Source requiring approval under PSD: ..... $_____

Applicant's Checklist

Check the following list to make sure that all the required documents are included.

- ☒ **General Information Form (GIF)**
- ☒ **Processes Plan Approval Application**
- ☒ **Compliance Review Form** or provide reference of most recently submitted compliance review form for facilities submitting on a periodic basis: ***5/14/2015***
- ☒ **Copy and Proof of County and Municipal Notifications**
- ☒ **Permit Fees**
- ☒ **Addendum A:** Source Applicable Requirements (only applicable to existing Title V facility)

Certification of Truth, Accuracy and Completeness by a Responsible Official

I, ***Jeffrey K. Warmann***, certify under penalty of law in 18 Pa. C. S. A. §4904, and 35 P.S. §4009(b) (2) that based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate and complete.

(Signature): _____ Date: 9/14/2015

Name (Print): ***Jeffrey K. Warmann*** Title: ***President and CEO***

OFFICIAL USE ONLY

Application No. _____ Unit ID _____ Site ID _____

DEP Client ID #: _____ APS. ID _____ AUTH. ID _____

Date Received _____ Date Assigned _____ Reviewed By _____

Date of 1st Technical Deficiency _____ Date of 2nd Technical Deficiency _____

Comments: _____

Section B - Combustion Unit Information

1. Combustion Units: ☐ Coal ☐ Oil ☐ Natural Gas Other: ***Refinery Gas***

Description: ***Reactor Effluent Heater H-124-01 (H01)***

Manufacturer	Model No.	Number of units
Tulsa Heaters, Inc.	***N/A***	***1***

Maximum heat input (Btu/hr)	Rated heat input (Btu/hr)	Typical heat input (Btu/hr)	Furnace Volume
99.6 MMBtu/hr	***99.6 MMBtu/hr***	***99.6 MMBtu/hr***	***16,040 ft^3***

Grate Area (if applicable)	Method of firing
N/A	***Natural draft***

Indicate how combustion air is supplied to boiler
Natural draft

Indicate the Steam Usage: ***N/A***

Mark and describe soot Cleaning Method: ***N/A***

i. Air Blown
ii. Steam Blown
iii. Brushed and Vacuumed`
iv. Other _____
v. Frequency of Cleaning _____

Maximum Operating schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	***7***	***365***	***8,760***

Operational restrictions taken or requested, if any (e.g., bottlenecks or voluntary restrictions to limit potential to emit)

Capacity (specify units)

Per hour	Per day	Per week	Per year
99.6 MMBtu	***2,390.4 MMBtu***	***16,732.8 MMBtu***	***872,496 MMBtu***

Typical Operating schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	***7***	***365***	***8,760***

Seasonal variations (Months): If variations exist, describe them.
N/A
Operating using primary fuel: _____ From _____ to _____
Operating using secondary fuel: _____ Form _____ to _____
Non-operating: From _____ to _____

2. Specify the primary, secondary and startup fuel. Furnish the details in item 3.
Primary & Startup Fuel = Refinery Fuel Gas

Section B - Combustion Unit Information (Continued)

3. Fuel

Type	Quantity Hourly	Annually	Sulfur	% Ash (Weight)	BTU Content
Oil Number	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Oil Number	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Oil Number	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Natural Gas	SCFH	X 10^6 Gal	gr/100 SCF		Btu/SCF
Gas (other)	SCFH	X 10^6 Gal	gr/100 SCF		Btu/SCF
Coal					
Other* ***Refinery Fuel Gas***	***~ 84,263 SCFH***	***~ 7.38 E08 SCF/YR***	***<162 ppm (3-hr avg.) as H_2S*** ***<50 ppm (12-month rolling avg.) as H_2S***	***Negligible***	***~ 1,182 Btu/SCF***

***** Note: Describe and furnish information separately for other fuels in Addendum B.

4. Burner

Manufacturer	Model Number	Type of Atomization (Steam, air, press, mech., rotary cup)
Callidus	***CUBL***	***N/A***

Number of Burners	Maximum fuel firing rate (all burners)	Normal fuel firing rate
8	***12.45 MMBtu/hr***	***8.91 MMBtu/hr***

If oil, temperature and viscosity.
N/A

Maximum theoretical air requirement
15% excess air

Percent excess air 100% rating
15%

Turndown ratio
50%

Combustion modulation control (on/off, low-high fire, full automatic, manual). Describe. ***Manual control***

Main burner flame ignition method (electric spark, auto gas pilot, hand-held torch, other). Describe. ***Natural gas pilot***

5. Nitrogen Oxides (NO_x) control Options

Mark and describe the NO_x control options adopted

- ☐ Low excess air (LEA)
- ☐ Over fire air (OFA)
- ☒ Low-NO_x burner
- ☐ Low NO_x burners with over fire air
- ☐ Flue gas recirculation
- ☐ Burner out of service
- ☐ Reburning
- ☐ Flue gas treatment (SCR / SNCR)

Other._____

Section B - Combustion Unit Information (Continued)

6. Miscellaneous Information

Describe fly ash reinjection operation
N/A

Describe, in detail, the equipment provided to monitor and to record the source(s) operating conditions, which may affect emissions of air contaminants. Show that they are reasonable and adequate.

Continuous Emission Monitoring Systems (CEMS) will measure NO_X and O_2 through direct extraction. The heater will also be equipped with a fuel gas flow meter. Fuel gas will be supplied by the existing North Side Fuel Gas system which is already monitored for H_2S and heating value (Btu/scf).

Describe each proposed modification to an existing source.

N/A

Describe how emissions will be minimized especially during start up, shut down, combustion upsets and/or disruptions. Provide emission estimates for start up, shut down and upset conditions. Provide duration of start up and shut down.

Emissions will be minimized by operating the heater in accordance with manufacturer specifications and by minimizing startup time.

Describe in detail with a schematic diagram of the control options adopted for SO_2 (if applicable).
N/A

Anticipated milestones:

Expected commencement date of construction/reconstruction: ***2Q2016***
Expected completion date of construction/reconstruction: ***2Q2017***
Anticipated date(s) of start-up: ***2Q2017***

Section C - Air Cleaning Device

1. Precontrol Emissions* – *Not Available*

Emission Rate

Pollutant	Maximum Emission Rate				Calculation/ Estimation Method
	Specify Units	Pounds/Hour	Hours/Year	Tons/Year	
PM					
PM_{10}					
SOx					
CO					
NO_x					
VOC					
Others: (e.g., HAPs)	-----	-----	-----		-----

* These emissions must be calculated based on the requested operating schedule and/or process rate, e.g., operating schedule for maximum limits or restricted hours of operation and/or restricted throughput. Describe how the emission values were determined. Attach calculations.

2. Gas Conditioning – *N/A*

Water quenching ☐ YES ☐ NO Water injection rate _____GPM

Radiation and convection cooling ☐ YES ☐ NO

Air dilution ☐ YES ☐ NO

If YES, _____ CFM

Forced draft ☐ YES ☐ NO

Water cooled duct work ☐ YES ☐ NO

Other _____

Inlet volume

_____ ACFM@ _____ °F

Outlet volume

_____ ACFM@ _____ °F _____ % Moisture

Describe the system in detail.

Section C - Air Cleaning Device (Continued)

3. Inertial and Cyclone Collectors – *N/A*

Manufacturer	Type	Model No.

Pressure Drop (in. of water)	Inlet Volume	Outlet Volume
	_____ ACFM @ _____ °F	_____ ACFM @ _____°F _____% Moisture

Number of Individual Cyclone(s)	Outlet Straightening Vanes Used? ☐ Yes ☐ No

Length of Cyclone(s) Cylinder (ft)	Diameter of Cyclone(s) Cylinder	Length of cyclone(s) cone (ft)

Inlet Diameter (ft) or Duct Area (ft^2) of Cyclone(s)	Outlet Diameter (ft) or Duct area (ft^2) of cyclone(s)

If a multi-clone or multi-tube unit is installed, will any of the individual cyclones or cyclone tubes be blanked or blocked off?

Describe any exhaust gas recirculation loop to be employed.

Attach particle size efficiency curve

Emission data

Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

4. Fabric Collector – *N/A*

Equipment Specifications

Manufacturer	Model No. ☐ Pressurized Design ☐ Suction Design	
Number of Compartments	Number of Filters Per Compartment	Is Baghouse Insulated? ☐ Yes ☐ No

Can each compartment be isolated for repairs and/or filter replacement? ☐ Yes ☐ No

Are temperature controls provided? (Describe in detail) ☐ Yes ☐ No

Dew point at maximum moisture _____ °F | Design inlet volume _____ SCFM

Type of Fabric

Material _____ ☐ Felted ☐ Membrane

Weight _____ oz/sq.yd ☐ Woven ☐ Others: List: _____

Thickness _____ in ☐ Felted-Woven

Fabric permeability (clean) @ ½" water-Δ P _____ CFM/sq.ft.

Filter dimensions _____ Diameter/Width _____

Effective area per filter _____ | Maximum operating temperature (°F) _____

Effective air to cloth ratio Minimum _____ Maximum _____

Drawing of Fabric Filter

A sketch of the fabric filter showing all access doors, catwalks, ladders and exhaust ductwork, location of each pressure and temperature indicator should be attached.

Operation and Cleaning

Volume of gases handled _____ ACFM _____ °F	Pressure drop across collector (in. of water). Describe the equipment to be used to monitor the pressure drop.

Type of filter cleaning

☐ Manual Cleaning ☐ Bag Collapse ☐ Reverse Air Jets

☐ Mechanical Shakers ☐ Sonic Cleaning ☐ Other: _____

☐ Pneumatic Shakers ☐ Reverse Air Flow

If compressed air is required for collector operation, describe the equipment with the compressor to provide dry air free from oil.

Cleaning Initiated By

☐ Timer Frequency if timer actuated _____

☐ Expected pressure drop range _____ in. of water ☐ Other Specify _____

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when the unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

5. Wet Collection Equipment:- *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Relative Particulate/Gas Velocity (ejector scrubbers only)

Describe the internal features (e.g., variable throat, gas/liquid diffusion plates, spray nozzles, liquid redistributors, bed limiters, etc.).

Describe pH monitoring and pH adjustment systems, if applicable.

Describe mist eliminator or separator (type, configuration, backflush capability, frequency).

Attach particulate size efficiency curve.

Operating Parameters

Inlet volume of gases handled _____ (ACFM) @_____°F	Outlet volume of gases handled _____ (ACFM) @_____ °F _____% Moisture

Liquid flow rates. Describe equipment provided to measure liquid flow rates to scrubber (e.g., quenching section, recirculating solution, makeup water, bleed flow, etc.)

Describe scrubber liquid supply system (amount of make-up and recirculating liquid, capacity of recirculating liquid system, etc).

State pressure drop range (in water) across scrubber (e.g., venturi throat, packed bed, etc.) only. Describe the equipment provide to measure the pressure drop. Do not include duct or de-mister losses.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

6. Electrostatic Precipitator – *N/A*

Equipment specifications

Manufacturer	Model No.	☐ Wet ☐ Dry ☐ Single-Stage ☐ Two-Stage

Gas distribution grids ☐ YES ☐ NO	Design inlet volume (SCFM) _____ Maximum operating temperature (°F) _____

Total collecting surface area _____ sq. ft. Collector plates size length _____ ft. x width _____ ft.

Number of fields _____ Number of collector plates/field _____. Spacing between collector plates _____inches.

Maximum gas velocity _____ ft/sec. Minimum gas treatment time: _____ sec.

Total discharge electrode length _____ ft.

Number of discharge electrodes _____ Number collecting electrode rappers _____

Rapper control ☐ Magnetic ☐ Pneumatic ☐ Other _____

Describe in detail

Operating parameters

Inlet gas temperature (°F) _____ Outlet gas temperature (°F) _____	State pressure drop range (water gauge) across collector only. Describe the equipment.
Volume of gas handled (ACFM) _____	Dust resistivity (ohm-cm). Will resistivity vary?

Power requirements

Number and size of Transformer Rectifier sets by electrical field

Field No.	No. of Sets	Each Transformer KVA	Each Rectifier	
			KV Ave./Peak	MaDC

Current density	Corona power	Corona power density
_____ Micro amperes/ft^2	_____ Watts/1000 ACFM	_____ Watts/ft^2

Will a flue gas conditioning system be employed? If yes, describe it.

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

7. Absorption Equipment: - *N/A*

Equipment specifications

Manufacturer	Type	Model No

Design inlet volume (SCFM)	Tower height (ft) and inside diameter (ft)
Packing type and size (if applicable)	Height of packing (ft) (if applicable)
Number of trays (if applicable)	Number of bubble caps (if applicable)

Configuration: ☐ Counter-current ☐ Cross flow ☐ Cocurrent flow

Describe pH and/or other monitoring and controls

Absorbent information

Absorbent type and concentration	Sorbent injection rate	Retention time (sec)

Attach equilibrium data for absorption (If applicable).

Attach any additional information regarding auxiliary equipment, reagent (slurry mix) supply system (once through or recirculating, system capacity, etc) to thoroughly evaluate the control equipment. Indicate the flow rates for makeup, bleed and recirculation.

Operating parameters

Volume of gas handled (ACFM)	Inlet temperature (°F)	Pressure drop (in of water) and liquid flow rate. Describe the equipment.

State operating range for pH and/or absorbent concentration in scrubber liquid.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

8. ☐ **SELECTIVE CATALYTIC REDUCTION (SCR) – *N/A***

☐ **SELECTIVE NON-CATALYTIC REDUCTION (SNCR) – *N/A***

☐ **NON-SELECTIVE CATALYTIC REDUCTION (NSCR) – *N/A***

Equipment specifications

Manufacturer	Type	Model No

Design inlet volume (SCFM)	Design operating temperature (°F)

Is the system equipped with process controls for proper mixing/control of the reducing agent in gas stream? If yes, give details.

Attach efficiency and other pertinent information (e.g., Ammonia, urea slip).

Operating parameters

Volume of gases handled (ACFM)_____ @__ (°F)

Operating temperature range for the SCR/SNCR/NSCR system (°F) From To

Reducing agent used, if any.	Oxidation catalyst used, if any.

State expected range of usage rate and concentration.

Service life of catalyst	Ammonia slip (ppm)

Describe fully with a sketch giving locations of equipment, controls system, important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

9. Other Control Equipment: *N/A*

Equipment specifications

Manufacturer	Type	Model No

Design inlet volume (SCFM)	Capacity

Describe pH monitoring and pH adjustment, if any.

Indicate the liquid flow rate and describe equipment provided to measure pressure drop and flow rate, if any.

Attach efficiency curve and/ or other efficiency information.

Attach any additional data including auxiliary equipment and operation details to thoroughly evaluate the control equipment.

Operating parameters

Volume of gas handled

_____ @ _____ °F ___ % Moisture ***(by volume)***

Describe, in detail, important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions data – *N/A – The FGR is integral to the boiler design.*

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

10. Costs – *N/A*

Indicate cost associated with air cleaning device and its operating cost (attach documentation if necessary)

Device	Direct Cost	Indirect Cost	Total Cost	Operating Cost

11. MISCELLANEOUS – *N/A*

Describe in detail the removal, handling and disposal of dust, effluent, etc. from the air cleaning device including proposed methods of controlling fugitive emissions.

Attach manufacturer's performance guarantees and/or warranties for each of the major components of the control system (or complete system).

Attach the maintenance schedule for the control equipment and any part of the process equipment that, if in disrepair, would increase air contaminant emissions.

Section B - Combustion Unit Information

2. Combustion Units: ☐ Coal ☐ Oil ☐ Natural Gas Other: ***Refinery Gas***

Description: ***Stripper Reboiler Heater H-124-02 (H02)***

Manufacturer	Model No.	Number of units
Tulsa Heaters, Inc.	***N/A***	***1***

Maximum heat input (Btu/hr)	Rated heat input (Btu/hr)	Typical heat input (Btu/hr)	Furnace Volume
44.2 MMBtu/hr	***44.2 MMBtu/hr***	***44.2 MMBtu/hr***	***6,682 ft^3***

Grate Area (if applicable)	Method of firing
N/A	***Natural draft***

Indicate how combustion air is supplied to boiler
Natural draft

Indicate the Steam Usage: ***N/A***

Mark and describe soot Cleaning Method: ***N/A***

i. Air Blown
ii. Steam Blown
iii. Brushed and Vacuumed`
iv. Other _____
v. Frequency of Cleaning _____

Maximum Operating schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	***7***	***365***	***8,760***

Operational restrictions taken or requested, if any (e.g., bottlenecks or voluntary restrictions to limit potential to emit)

Capacity (specify units)

Per hour	Per day	Per week	Per year
44.2 MMBtu/hr	***1,056.0 MMBtu***	***7,392.0 MMBtu***	***385,440 MMBtu***

Typical Operating schedule

Hours/Day	Days/Week	Days/Year	Hours/Year
24	***7***	***365***	***8,760***

Seasonal variations (Months): If variations exist, describe them.
N/A
Operating using primary fuel: _____ From _____ to _____
Operating using secondary fuel: _____ Form _____ to _____
Non-operating: From _____ to _____

3. Specify the primary, secondary and startup fuel. Furnish the details in item 3.
Primary & Startup Fuel = Refinery Fuel Gas

Section B - Combustion Unit Information (Continued)

5. Fuel

Type	Quantity Hourly	Annually	Sulfur	% Ash (Weight)	BTU Content
Oil Number	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Oil Number	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Oil Number	GPH @ 60°F	X 10^3 Gal	% by wt		Btu/Gal. & Lbs./Gal. @ 60 °F
Natural Gas	SCFH	X 10^6 Gal	gr/100 SCF		Btu/SCF
Gas (other)	SCFH	X 10^6 Gal	gr/100 SCF		Btu/SCF
Coal					
Other* ***Refinery Fuel Gas***	***~ 37,225 SCFH***	***~ 3.26 E08 SCF/YR***	***<162 ppm (3-hr avg.) as H_2S <50 ppm (12-month rolling avg.) as H_2S***	***Negligible***	***~ 1,182 Btu/SCF***

***** Note: Describe and furnish information separately for other fuels in Addendum B.

6. Burner

Manufacturer	Model Number	Type of Atomization (Steam, air, press, mech., rotary cup)
Callidus	***CUBL***	***N/A***

Number of Burners	Maximum fuel firing rate (all burners)	Normal fuel firing rate
4	***11.05 MMBtu/hr***	***7.66 MMBtu/hr***

If oil, temperature and viscosity.
N/A

Maximum theoretical air requirement
15% excess air

Percent excess air 100% rating
15%

Turndown ratio
50%

Combustion modulation control (on/off, low-high fire, full automatic, manual). Describe. ***Manual control***

Main burner flame ignition method (electric spark, auto gas pilot, hand-held torch, other). Describe. ***Natural gas pilot***

5. Nitrogen Oxides (NO_x) control Options

Mark and describe the NO_x control options adopted

- ☐ Low excess air (LEA)
- ☐ Over fire air (OFA)
- ☒ Low-NO_x burner
- ☐ Low NO_x burners with over fire air
- ☐ Flue gas recirculation
- ☐ Burner out of service
- ☐ Reburning
- ☐ Flue gas treatment (SCR / SNCR)

Other._____

Section B - Combustion Unit Information (Continued)

6. Miscellaneous Information

Describe fly ash reinjection operation
N/A

Describe, in detail, the equipment provided to monitor and to record the source(s) operating conditions, which may affect emissions of air contaminants. Show that they are reasonable and adequate.

Continuous Emission Monitoring Systems (CEMS) will measure NO_X and O_2 through direct extraction. The heater will also be equipped with a fuel gas flow meter. Fuel gas will be supplied by the existing North Side Fuel Gas system which is already monitored for H_2S and heating value (Btu/scf).

Describe each proposed modification to an existing source.

N/A

Describe how emissions will be minimized especially during start up, shut down, combustion upsets and/or disruptions. Provide emission estimates for start up, shut down and upset conditions. Provide duration of start up and shut down.

Emissions will be minimized by operating the heater in accordance with manufacturer specifications and by minimizing startup time.

Describe in detail with a schematic diagram of the control options adopted for SO_2 (if applicable).
N/A

Anticipated milestones:

Expected commencement date of construction/reconstruction: ***2Q2016***
Expected completion date of construction/reconstruction: ***2Q2017***
Anticipated date(s) of start-up: ***2Q2017***

Section C - Air Cleaning Device

1. Precontrol Emissions* – *Not Available*

Emission Rate

Pollutant	Maximum Emission Rate				Calculation/ Estimation Method
	Specify Units	Pounds/Hour	Hours/Year	Tons/Year	
PM					
PM_{10}					
SOx					
CO					
NO_x					
VOC					
Others: (e.g., HAPs)	-----	-----	-----		-----

* These emissions must be calculated based on the requested operating schedule and/or process rate, e.g., operating schedule for maximum limits or restricted hours of operation and/or restricted throughput. Describe how the emission values were determined. Attach calculations.

2. Gas Conditioning – *N/A*

Water quenching ☐ YES ☐ NO Water injection rate _____GPM

Radiation and convection cooling ☐ YES ☐ NO

Air dilution ☐ YES ☐ NO

If YES, _____ CFM

Forced draft ☐ YES ☐ NO

Water cooled duct work ☐ YES ☐ NO

Other _____

Inlet volume

_____ ACFM@ _____ °F

Outlet volume

_____ ACFM@ _____ °F _____ % Moisture

Describe the system in detail.

Section C - Air Cleaning Device (Continued)

3. Inertial and Cyclone Collectors – *N/A*

Manufacturer	Type	Model No.

Pressure Drop (in. of water)	Inlet Volume	Outlet Volume
	_____ ACFM @ _____ °F	_____ ACFM @ _____°F _____% Moisture

Number of Individual Cyclone(s)	Outlet Straightening Vanes Used? ☐ Yes ☐ No

Length of Cyclone(s) Cylinder (ft)	Diameter of Cyclone(s) Cylinder	Length of cyclone(s) cone (ft)

Inlet Diameter (ft) or Duct Area (ft^2) of Cyclone(s)	Outlet Diameter (ft) or Duct area (ft^2) of cyclone(s)

If a multi-clone or multi-tube unit is installed, will any of the individual cyclones or cyclone tubes be blanked or blocked off?

Describe any exhaust gas recirculation loop to be employed.

Attach particle size efficiency curve

Emission data

Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

4. Fabric Collector – *N/A*

Equipment Specifications

Manufacturer	Model No. ☐ Pressurized Design ☐ Suction Design	
Number of Compartments	Number of Filters Per Compartment	Is Baghouse Insulated? ☐ Yes ☐ No

Can each compartment be isolated for repairs and/or filter replacement? ☐ Yes ☐ No

Are temperature controls provided? (Describe in detail) ☐ Yes ☐ No

Dew point at maximum moisture _____ °F | Design inlet volume _____ SCFM

Type of Fabric

Material _____ ☐ Felted ☐ Membrane

Weight _____ oz/sq.yd ☐ Woven ☐ Others: List: _____

Thickness _____ in ☐ Felted-Woven

Fabric permeability (clean) @ ½" water-Δ P _____ CFM/sq.ft.

Filter dimensions _____ Diameter/Width _____

Effective area per filter _____ | Maximum operating temperature (°F) _____

Effective air to cloth ratio Minimum _____ Maximum _____

Drawing of Fabric Filter

A sketch of the fabric filter showing all access doors, catwalks, ladders and exhaust ductwork, location of each pressure and temperature indicator should be attached.

Operation and Cleaning

Volume of gases handled _____ ACFM _____ °F	Pressure drop across collector (in. of water). Describe the equipment to be used to monitor the pressure drop.

Type of filter cleaning

☐ Manual Cleaning ☐ Bag Collapse ☐ Reverse Air Jets

☐ Mechanical Shakers ☐ Sonic Cleaning ☐ Other: _____

☐ Pneumatic Shakers ☐ Reverse Air Flow

If compressed air is required for collector operation, describe the equipment with the compressor to provide dry air free from oil.

Cleaning Initiated By

☐ Timer Frequency if timer actuated _____

☐ Expected pressure drop range _____ in. of water ☐ Other Specify _____

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when the unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

5. Wet Collection Equipment:- *N/A*

Equipment Specifications

Manufacturer	Type	Model No.

Design Inlet Volume (SCFM)	Relative Particulate/Gas Velocity (ejector scrubbers only)

Describe the internal features (e.g., variable throat, gas/liquid diffusion plates, spray nozzles, liquid redistributors, bed limiters, etc.).

Describe pH monitoring and pH adjustment systems, if applicable.

Describe mist eliminator or separator (type, configuration, backflush capability, frequency).

Attach particulate size efficiency curve.

Operating Parameters

Inlet volume of gases handled _____ (ACFM) @_____°F	Outlet volume of gases handled _____ (ACFM) @_____ °F _____% Moisture

Liquid flow rates. Describe equipment provided to measure liquid flow rates to scrubber (e.g., quenching section, recirculating solution, makeup water, bleed flow, etc.)

Describe scrubber liquid supply system (amount of make-up and recirculating liquid, capacity of recirculating liquid system, etc).

State pressure drop range (in water) across scrubber (e.g., venturi throat, packed bed, etc.) only. Describe the equipment provide to measure the pressure drop. Do not include duct or de-mister losses.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions Data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

6. Electrostatic Precipitator – *N/A*

Equipment specifications

Manufacturer	Model No.	☐ Wet ☐ Dry ☐ Single-Stage ☐ Two-Stage

Gas distribution grids ☐ YES ☐ NO	Design inlet volume (SCFM) _____ Maximum operating temperature (°F) _____

Total collecting surface area _____ sq. ft. Collector plates size length _____ ft. x width _____ ft.

Number of fields _____ Number of collector plates/field _____. Spacing between collector plates _____inches.

Maximum gas velocity _____ ft/sec. Minimum gas treatment time: _____ sec.

Total discharge electrode length _____ ft.

Number of discharge electrodes _____ Number collecting electrode rappers _____

Rapper control ☐ Magnetic ☐ Pneumatic ☐ Other _____

Describe in detail

Operating parameters

Inlet gas temperature (°F) _____ Outlet gas temperature (°F) _____	State pressure drop range (water gauge) across collector only. Describe the equipment.
Volume of gas handled (ACFM) _____	Dust resistivity (ohm-cm). Will resistivity vary?

Power requirements

Number and size of Transformer Rectifier sets by electrical field

Field No.	No. of Sets	Each Transformer KVA	Each Rectifier	
			KV Ave./Peak	MaDC

Current density	Corona power	Corona power density
_____ Micro amperes/ft^2	_____ Watts/1000 ACFM	_____ Watts/ft^2

Will a flue gas conditioning system be employed? If yes, describe it.

Does air cleaning device employ hopper heaters, hopper vibrators or hopper level detectors? If yes, describe.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

7. Absorption Equipment: - *N/A*

Equipment specifications

Manufacturer	Type	Model No

Design inlet volume (SCFM)	Tower height (ft) and inside diameter (ft)
Packing type and size (if applicable)	Height of packing (ft) (if applicable)
Number of trays (if applicable)	Number of bubble caps (if applicable)

Configuration: ☐ Counter-current ☐ Cross flow ☐ Cocurrent flow

Describe pH and/or other monitoring and controls

Absorbent information

Absorbent type and concentration	Sorbent injection rate	Retention time (sec)

Attach equilibrium data for absorption (If applicable).

Attach any additional information regarding auxiliary equipment, reagent (slurry mix) supply system (once through or recirculating, system capacity, etc) to thoroughly evaluate the control equipment. Indicate the flow rates for makeup, bleed and recirculation.

Operating parameters

Volume of gas handled (ACFM)	Inlet temperature (°F)	Pressure drop (in of water) and liquid flow rate. Describe the equipment.

State operating range for pH and/or absorbent concentration in scrubber liquid.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

8. ☐ **SELECTIVE CATALYTIC REDUCTION (SCR) – *N/A***

☐ **SELECTIVE NON-CATALYTIC REDUCTION (SNCR) – *N/A***

☐ **NON-SELECTIVE CATALYTIC REDUCTION (NSCR) – *N/A***

Equipment specifications

Manufacturer	Type	Model No

Design inlet volume (SCFM)	Design operating temperature (°F)

Is the system equipped with process controls for proper mixing/control of the reducing agent in gas stream? If yes, give details.

Attach efficiency and other pertinent information (e.g., Ammonia, urea slip).

Operating parameters

Volume of gases handled (ACFM)_____ @__ (°F)

Operating temperature range for the SCR/SNCR/NSCR system (°F) From To

Reducing agent used, if any.	Oxidation catalyst used, if any.

State expected range of usage rate and concentration.

Service life of catalyst	Ammonia slip (ppm)

Describe fully with a sketch giving locations of equipment, controls system, important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions data

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

9. Other Control Equipment: ***N/A***

Equipment specifications

Manufacturer	Type	Model No

Design inlet volume (SCFM)	Capacity

Describe pH monitoring and pH adjustment, if any.

Indicate the liquid flow rate and describe equipment provided to measure pressure drop and flow rate, if any.

Attach efficiency curve and/ or other efficiency information.

Attach any additional data including auxiliary equipment and operation details to thoroughly evaluate the control equipment.

Operating parameters

Volume of gas handled

_____ @ _____ °F ___ % Moisture ***(by volume)***

Describe, in detail, important parameters and method of operation.

Describe the warning/alarm system that protects against operation when unit is not meeting design requirements.

Emissions data – *N/A – The FGR is integral to the boiler design.*

Pollutant	Inlet	Outlet	Removal Efficiency (%)

Section C - Air Cleaning Device (Continued)

10. Costs – *N/A*

Indicate cost associated with air cleaning device and its operating cost (attach documentation if necessary)

Device	Direct Cost	Indirect Cost	Total Cost	Operating Cost

11. MISCELLANEOUS – *N/A*

Describe in detail the removal, handling and disposal of dust, effluent, etc. from the air cleaning device including proposed methods of controlling fugitive emissions.

Attach manufacturer's performance guarantees and/or warranties for each of the major components of the control system (or complete system).

Attach the maintenance schedule for the control equipment and any part of the process equipment that, if in disrepair, would increase air contaminant emissions.

Section D - Additional Information

Will the construction, modification, etc. of the sources covered by this application increase emissions from other sources at the facility? If so, describe and quantify.

See Attachment A – Application Narrative.

If this project is subject to any one of the following, attach a demonstration to show compliance with applicable standards

a. Prevention of Significant Deterioration permit (PSD), 40 CFR Part 52? ☐ YES ☒ NO

b. New Source Review, 25 Pa. Code Chapter 127, Subchapter E? ☒ YES ☐ NO

c. New Source Performance Standards, 40 CFR Part 60? ☒ YES ☐ NO
(If Yes, which subpart) ***Ja***

d. National Emissions Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61? ☐ YES ☒ NO
If Yes, which subpart) _____

e. Maximum Achievable Control Technology (MACT), 40 CFR Part 63? ☒ YES ☐ NO
(If Yes, which subpart) ***DDDDD***

Attach a demonstration showing that the emissions from any new source will be the minimum attainable through the use of best available technology (BAT).

See Attachment A – Application Narrative.

Provide emission increases and decreases in allowable (or potential) and actual emissions within the last 5 years for applicable PSD pollutant(s) if the facility is an existing major facility (for PSD purposes)

See Attachment C – Emissions Inventory

Section D - Additional Information (Continued)

Indicate emission increases and decreases in tons per year (tpy), for volatile organic compounds (VOCs) and nitrogen oxides (NOx) for NSR applicability since January 1, 1991 or other applicable dates (See other applicable date in instructions). The emissions increases include all emissions including stack, fugitive, material transfer, other emission generating activities, quantifiable emissions from the exempted source(s), etc.

Permit number (if applicable)	Date issued	Indicate ***Yes*** or ***No*** if emission increases and decreases were used previously for netting	Source I.D. or Name	**VOC**s		**NOx**	
				Emission increases in potential to emit (tpy)	Creditable emission decreases in actual emissions (tpy)	Emission increases in potential to emit (tpy)	Creditable emission decreases in actual emissions (tpy)

See Attachment C – Emissions Inventory

If the source is subject to 25 Pa. Code Chapter 127, Subchapter E, New Source Review requirements,

See Attachment A – Application Narrative.

a. Identify Emission Reduction Credits (ERCs) for emission offsets or demonstrate ability to obtain suitable ERCs for emission offsets.

b. Provide a demonstration that the lowest achievable emission rate (LAER) control techniques will be implemented (if applicable).

c. Provide an analysis of alternate sites, sizes, production processes and environmental control techniques demonstrating that the benefits of the proposed source outweigh the environmental and social costs (if applicable).

Attach calculations and any additional information necessary to thoroughly evaluate compliance with all the applicable requirements of 25 Pa. Code Article III and applicable requirements of the Clean Air Act and regulations adopted there under. The Department may request additional information to evaluate the application such as a stand by plan, a plan for air pollution emergencies, air quality modeling, etc.

See Attachment C – Emissions Inventory.

Section E - Compliance Demonstration – *N/A*

Note: Complete this section if the facility is not a-Title V facility. Title V facilities must complete Addendum A.

Method of Compliance Type: Check all that apply and complete all appropriate sections below.

☐ Monitoring ☐ Testing ☐ Reporting
☐ Recordkeeping ☐ Work Practice Standard

Monitoring:

a. Monitoring device type (stack test, CEM etc.):

b. Monitoring device location:

c. Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Testing:

a. Reference Test Method Citation:

b. Reference Test Method Description:

Recordkeeping:

Describe the parameters that will be recorded and the recording frequency:

Reporting:

a. Describe the type of information to be reported and the reporting frequency:

b. Reporting start date:

Work Practice Standard: Describe each

Section F - Flue and Air Contaminant Emission

1. Estimated Maximum Emissions*

Pollutant	Maximum emission rate			Calculation/ Estimation Method
	specify units	lbs/hr	tons/yr.	
PM				
PM_{10}				
SO_x				
CO				
NO_x				
VOC				
Others: (e.g., HAPs)	-----	-----	-----	-----

See Attachment C – Emissions Inventory

* These emissions must be calculated based on the requested operating schedule and/or process rate e.g., operating schedule for maximum limits or restricted hours of operation and /or restricted throughput. Describe how the emission values were determined. Attach calculations.

2. Stack and Exhauster

Stack Designation/Number ***PADEP to assign***

List Source(s) or source ID exhausted to this stack:	% of flow exhausted to stack: ***100%***
H01	

Stack height above grade (ft.) ***150' 4"*** Grade elevation (ft.) ***~ 10 feet***	Stack diameter (ft) or Outlet duct area (sq. ft.) ***5' 2"***	Weather Cap ☐ YES ☒ NO

Distance of discharge to nearest property line (ft.). Locate on topographic map.

~ 600 – 1,000 feet

Does stack height meet Good Engineering Practice (GEP)?

N/A

If modeling (estimating) of ambient air quality impacts is needed, attach a site plan with buildings and their dimensions and other obstructions. ***N/A***

Location of Stack** Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

Stack Exhaust

Volume ***~29,316*** ACFM Temperature ***450*** °F Moisture ***15*** %

Exhauster (attach fan curves) ***N/A*** in. of water ***N/A*** HP @ ***N/A*** RPM.

** If the datum and collection method information and codes differ from those provided on the General Information Form - Authorization Application, provide the additional required by that form on a separate sheet.

2. Stack and Exhauster

Stack Designation/Number ***PADEP to assign***

List Source(s) or source ID exhausted to this stack: ***H02***	% of flow exhausted to stack: ***100%***

Stack height above grade (ft.) ***115' 3.5"*** Grade elevation (ft.) ***~ 10 feet***	Stack diameter (ft) or Outlet duct area (sq. ft.) ***3' 4"***	Weather Cap ☐ YES ☒ NO

Distance of discharge to nearest property line (ft.). Locate on topographic map.

~600 – 1,000 feet

Does stack height meet Good Engineering Practice (GEP)?

N/A

If modeling (estimating) of ambient air quality impacts is needed, attach a site plan with buildings and their dimensions and other obstructions. ***N/A***

Location of Stack** Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

Stack Exhaust

Volume ***~12,951*** ACFM Temperature ***450*** °F Moisture ***15*** %

Exhauster (attach fan curves) ***N/A*** in. of water ***N/A*** HP @ ***N/A*** RPM.

** If the datum and collection method information and codes differ from those provided on the General Information Form - Authorization Application, provide the additional required by that form on a separate sheet.

Section G - Attachments

Number and list all attachments submitted with this application below:

Attachment A – Application Narrative
Attachment B – PADEP Application Forms
Attachment C – Emissions Inventory
Attachment D – Municipal Notification Letters
Attachment E – All4 Inc. Quality Seal

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum A: Source Applicable Requirements

Describe and cite all applicable requirements pertaining to this source.
Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Citation Number	Citation Limitation	Limitation Used
40 CFR §60.102a(g)(1)(ii)	*Monroe shall not burn in any fuel gas combustion device, any fuel gas that contains H_2S in excess of 162 ppmv determined on a 3-hour rolling average basis and 50 ppmv determined on a 12-month rolling average basis.*	*H_2S fuel limitations as required in §60.102a(g)(1)(ii).*
40 CFR §60.102a(g)(2)(i)(B)	*The emissions of NO_X from the two (2) heaters will be limited to 0.040 lb/MMBtu at high heat release rate, determined on a 30-day rolling average.*	*NO_X emissions limitations as required in §60.102a(g)(2)(i)(B).*
40 CFR §60.103a(c)(2)	*Monroe will conduct a root cause analysis and a corrective action analysis for the process heaters for each instance indicated.*	*Conditions as specified in §60.102a(c)(2).*
40 CFR §60.104a(a)	*Monroe will conduct a NO_X performance test of the new process heaters no later than 60 days after achieving maximum production rate or 180 days after initial startup, whichever comes first.*	*Performance testing as required in §60.104a(a).*
40 CFR §60.107a(a)(2)	*Monroe shall install, operate, calibrate and maintain a device to continuously monitor fuel gas H_2S content.*	*Monitoring of fuel gas H_2S content and operations for fuel gas combustion device and flares as specified in 60.107a(a)(2).*
40 CFR §60.107a(d)	*Monroe shall install, operate, calibrate and maintain a device to continuously monitor the emissions rate of NO_X into the atmosphere.*	*Monitoring of NO_X emissions and operations for process heaters as specified in 40 CFR §60.107a(d).*

Citation Number	Citation Limitation	Limitation Used
40 CFR §60.108a(b)	*Monroe will notify the administrator of the specific monitoring provisions of §60.106a for which Monroe intends to comply. This notification will be submitted with the notification of initial startup required by §60.7(a)(3).*	*Notifications as required in §60.108a(b).*
40 CFR §60.108a(c)	*Monroe will maintain records of excess emissions. Monroe will record the required information no later than 45 days following the end of a discharge exceeding this threshold.*	*Records as required in 40 CFR §60.108a(c).*
40 CFR §60.108a(d)	*Monroe will submit semiannual excess emission reports containing the required information.*	*Excess emission reporting as specified in §60.108a(d).*
40 CFR §63.7500(a)(3)	*Monroe will operate and maintain the heaters in a manner consistent with safety and good air pollution control practices for minimizing emissions.*	*Compliance with work practice standards.*
40 CFR §63.7510(e) and §63.7510(j)	*Monroe will complete the one-time energy assessment specified in the Work Practice Standards of Table 3.*	*Compliance with initial requirements as required in §63.7510(e) and §63.7510(j)*
40 CFR §63.7540(a)(10)	*Monroe will meet the Work Practice Standards of Table 3 which include annual tune ups. The tune-ups will contain the required elements listed in §63.7540(a)(10). Tune-up reports will be maintained on site and submitted to the Administrator, if requested. The tune-up reports will contain the information required in §63.7540(a)(10)(vi)(A) through (C).*	*Compliance with continuous requirements as required in §63.7540(a)(10)*
40 CFR §63.7550	*Monroe will submit all compliance reports in accordance with 40 CFR §63.7550.*	*Compliance reports as required in 40 CFR §63.7550.*
40 CFR §63.7560	*Monroe will keep all required records on-site for at least two (2) years, and off-site for at least five (5) years.*	*Recordkeeping requirements as required in 40 CFR §63.7560.*

Citation Number	Citation Limitation	Limitation Used
25 Pa. Code §§123.1 & 123.2	***No fugitive emissions and no fugitive particulate emissions beyond the property line.***	***No fugitive emissions and no fugitive particulate emissions beyond the property line.***
25 Pa. Code §§123.11 & 123.13	***Particulate emission from process heater H-01 must remain under 0.27 lb/MMBtu, calculated using the equation $3.6E^{-0.56}$, where E represents the heat input to the boiler in MMBtu/hr, when E is equal to or greater than 50 but less than 600. Particulate emission from process heater H-02 must remain under 0.40 lb/MMBtu.***	***N/A***
25 Pa. Code §123.22	***SO_2 emissions are not to exceed more than 1.0 lb/MMBtu of SO_2 per hour.***	***N/A***
25 Pa. Code §123.41	***Visible emissions no greater than 20% for a period aggregating more than 3 minutes in any 1 hour or no greater than or equal to 60% at any one time.***	***No visible emissions greater than 20% for a period aggregating more than 3 minutes in any 1 hour or no greater than or equal to 60% at any one time***
25 Pa. Code §127.12(a)(5)	***Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), proper design, operation and good combustion and engineering practices as BAT for CO emissions.***	***CO BAT***
25 Pa. Code §127.12(a)(5)	***Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), proper design, operation and good combustion and engineering practices as BAT for VOC emissions.***	***VOC BAT***
25 Pa. Code §127.12(a)(5)	***Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning) and the application of low NO_X burners and a NO_X emission rate of 0.035 lb/MMBtu (30-day rolling average).***	***NO_X BAT***

Citation Number	Citation Limitation	Limitation Used
25 Pa. Code §127.12(a)(5)	***Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), and an emission rate for SO_2 to be <162 ppm H_2S (3-hr average) and 50 ppm (12-month rolling average) in fuel gas, for BAT for SO_2.***	***SO_2 BAT***
25 Pa. Code §127.12(a)(5)	***Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), proper design, operation and good combustion and engineering practices as BAT for PM emissions.***	***PM BAT***

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §60.102a(g)(1)(ii)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *H_2S CEMS.*
2. **Monitoring device location:** *Downstream of the North Side Fuel Gas Mix Pot*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Refinery fuel gas is continuously monitored for the H_2S concentration on an hourly basis to demonstrate compliance on a 3-hour rolling average basis.

3. How will data be reported: *N/A*

Section 3: Testing

1. Reference Test Method Description: *N/A*

2. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

H_2S concentration in the refinery fuel gas. Data are averaged in accordance with 40 CFR Part 60, Subpart Ja and PADEP's Continuous Source Monitoring Manual, Revision 8.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Monroe will submit reports of H_2S monitoring data on a quarterly basis in accordance with 40 CFR Part 60, Subpart Ja and PADEP's Continuous Source Monitoring Manual, Revision 8.

3. Reporting start date: *Already ongoing*

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §60.102a(g)(2)(i)(B)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

4. Monitoring device type (stack test, CEM, etc.): *NO_X CEMS*

5. Monitoring device location: *Stack*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Stack exhaust is continuously monitored for the NO_X emission rates on an hourly basis to demonstrate compliance on a 30-day rolling average.

6. How will data be reported: *N/A*

Section 3: Testing

4. Reference Test Method Description: *N/A*

5. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

NO_X emission rates will be monitored and averaged in accordance with 40 CFR Part 60, Subpart Ja and PADEP's Continuous Source Monitoring Manual, Revision 8.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Monroe will submit NO_X data reports on a quarterly basis.

6. Reporting start date: ***The end of the calendar quarter in which the unit(s) first start up***

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §60.103a(c)(2)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *N/A*
2. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

3. How will data be reported: *N/A*

Section 3: Testing

1. Reference Test Method Description: *N/A*

2. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

3. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe will conduct a root cause analysis and a corrective action analysis for the process heaters for each instance specified in 40 CFR §60.103a(c)(2).

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §60.104a(a)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☒ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

4. Monitoring device type (stack test, CEM, etc.): *N/A*

5. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

6. How will data be reported: *N/A*

Section 3: Testing

4. Reference Test Method Description: ***Conduct a NO_X performance test of the new process heaters no later than 60 days after achieving maximum production rate or 180 days after initial startup, whichever comes first.***

5. Reference Test Method Citation: ***Method 7, 7A, 7C, 7D, or 7E of appendix A-4 to 40 CF Part 60 for moisture content and for the emission rate of NOX calculated as nitrogen dioxide (NO_2).***

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Monroe will report the results of the NO_X performance test as required by 40 CFR Part 60, Subpart A.

6. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §60.107a(a)(2)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

7. Monitoring device type (stack test, CEM, etc.): *H_2S CEMS*

8. Monitoring device location: *Downstream of North Side Fuel Gas Mix Pot*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Refinery fuel gas is continuously monitored for the H_2S concentration.

9. How will data be reported: *N/A*

Section 3: Testing

7. Reference Test Method Description: *N/A*

8. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

H_2S concentrations will be monitored and averaged in accordance with 40 CFR Part 60, Subpart Ja and PADEP's Continuous Source Monitoring Manual, Revision 8.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

9. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §60.107a(d)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

10. Monitoring device type (stack test, CEM, etc.): *NO_X and O_2 CEMS*

11. Monitoring device location: *Stack*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Stack exhaust is continuously monitored for the NO_X emission rates (30-day rolling average) and O_2 concentrations.

12. How will data be reported:	***Data will be reported electronically to PADEP in accordance with the Continuous Source Monitoring Manual, Revision 8.***

Section 3: Testing

10. Reference Test Method Description:	***N/A***
11. Reference Test Method Citation:	***N/A***

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

NO_X emission rates and O_2 concentrations will be monitored and averaged in accordance with 40 CFR Part 60, Subpart Ja and PADEP's Continuous Source Monitoring Manual, Revision 8.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

12. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §60.108a(b)-(d)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *N/A*
2. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

3. **How will data be reported:** *N/A*

Section 3: Testing

1. Reference Test Method Description:	*N/A*
2. Reference Test Method Citation:	*N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Monroe will maintain the records required by §60.108a(c) and record all periods of excess emissions.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Monroe will submit the specific monitoring provisions for which Monroe intends to comply. Monroe will submit a semiannual excess emissions report for all periods of excess emissions. Monroe will submit notification of the actual date of initial startup within 15 days after such date.

3. Reporting start date:	***At the end of the semi-annual reporting period in which the ULSG startup occurs.***

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §63.7500(a)(3)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *N/A*
2. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

3. How will data be reported: *N/A*

Section 3: Testing

1. Reference Test Method Description: *N/A*

2. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

3. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe will operate and maintain the heaters in a manner consistent with safety and good air pollution control practices for minimizing emissions.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §§63.7510(e) and 63.7510(j)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

4. Monitoring device type (stack test, CEM, etc.): *N/A*

5. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

6. How will data be reported: *N/A*

Section 3: Testing

4. Reference Test Method Description: *N/A*

5. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

6. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe will complete the one-time energy assessment specified in the Work Practice Standards of Table 3.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §63.7540(a)(10)*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

7. Monitoring device type (stack test, CEM, etc.): *N/A*

8. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

9. How will data be reported: *N/A*

Section 3: Testing

7. Reference Test Method Description: *N/A*

8. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Monroe will maintain records of annual tune-ups performed on the proposed process heaters.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

9. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe will perform annual tune-ups of the proposed process heaters.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §63.7550*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☒ **Reporting**

☐ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

10. Monitoring device type (stack test, CEM, etc.): *N/A*

11. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

12. How will data be reported: *N/A*

Section 3: Testing

10. Reference Test Method Description: *N/A*

11. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Monroe will submit all compliance reports as required in accordance with 40 CFR §63.7550.

12. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *40 CFR §63.7560*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☒ **Record Keeping** ☐ **Work Practice Standard**

Section 2: Monitoring

13. Monitoring device type (stack test, CEM, etc.): *N/A*

14. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

15. How will data be reported: *N/A*

Section 3: Testing

13. Reference Test Method Description: *N/A*

14. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Monroe will maintain records on-site for at least two (2) years, and off-site for at least five (5) years.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

15. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

N/A

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 PA Code §123.1 & §123.2*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *Daily visual observations*
2. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

The property line is visually monitored daily to ensure fugitive emissions are not leaving the property.

3. How will data be reported: *Semi-annual TVOP deviations reports.*

Section 3: Testing

1. Reference Test Method Description: *N/A*

2. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

The Refinery maintains a log of visible emission observations in accordance with the Refinery's TVOP.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Deviations will be reported semi-annually.

1. Reporting start date: *Ongoing*

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe will operate according to good operating practices.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §123.11 and §123.13*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☒ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *N/A*
2. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

3. How will data be reported: *N/A*

Section 3: Testing

1. Reference Test Method Description: *N/A*

2. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

2. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe will operate the proposed heaters according to manufacturer specifications, and firing only refinery fuel gas.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §123.22*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *H_2S CEMS*
2. **Monitoring device location:** *Downstream of North Side Fuel Gas Mix Pot*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Refinery fuel gas is continuously monitored for the H_2S concentration.

3. How will data be reported:	***Data are reported in accordance with 40 CFR Part 60, Subpart Ja and PADEP's Continuous Source Monitoring Manual.***

Section 3: Testing

1. Reference Test Method Description:	***N/A***
2. Reference Test Method Citation:	***N/A***

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

H_2S concentration is continuously monitored and recorded.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Data are reported in accordance with 40 CFR Part 60, Subpart Ja and the PADEP's Continuous Source Monitoring Manual.

4. Reporting start date:	***Ongoing.***

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe will operate the proposed heaters according to manufacturer specifications.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §123.41*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☒ **Monitoring** ☐ **Testing** ☒ **Reporting**

☒ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *Daily visual observations*
2. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

Stacks and facility are monitored daily.

3. How will data be reported: *Deviations are reported semi-annually in accordance with the Refinery's TVOP.*

Section 3: Testing

1. Reference Test Method Description: *N/A*

2. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

Results of opacity observations will be recorded daily in accordance with the Refinery's TVOP.

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

Monroe will report any deviation in the Title V Semi-annual report every six months.

3. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe will operate the proposed heaters in accordance with good combustion practices and proper maintenance of the burners. The burners will be maintained and operated according to the manufacturer's recommendations. Monroe will conduct the one-time energy assessment specified at 40 CFR §63.7510(j,) and annual tune-up requirements specified in 40 CFR §63.7540(a)(10).

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §127.12(a)(5) – CO BAT*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

1. **Monitoring device type (stack test, CEM, etc.):** *N/A*
2. **Monitoring device location:** *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

3. **How will data be reported:** *N/A*

Section 3: Testing

1. Reference Test Method Description: *N/A*

2. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

3. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning proper design, operation and good combustion and engineering practices as BAT for CO emissions.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §127.12(a)(5) – VOC BAT*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

4. Monitoring device type (stack test, CEM, etc.): *N/A*

5. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

6. How will data be reported: *N/A*

Section 3: Testing

4. Reference Test Method Description: *N/A*

5. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

6. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), proper design, operation and good combustion and engineering practices as BAT for VOC emissions.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** *Proposed Process Heaters (H-01 and H-02)*

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §127.12(a)(5) – NO_X BAT*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

7. Monitoring device type (stack test, CEM, etc.): *N/A*

8. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

9. How will data be reported: *N/A*

Section 3: Testing

7. Reference Test Method Description: *N/A*

8. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

9. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), good operation practices and a low-NO_X burners to meet the proposed BAT emission rate for NO_X.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id:	*45-5201144*	**Firm Name:**	*Monroe Energy, LLC*
Plant Code:	*45-5201144*	**Plant Name:**	*Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** ***Proposed Process Heaters (H-01 and H-02)***

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: ***25 Pa. Code §127.12(a)(5) – SO_2 BAT***

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

10. Monitoring device type (stack test, CEM, etc.): *N/A*

11. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

12. How will data be reported: *N/A*

Section 3: Testing

10. Reference Test Method Description: *N/A*

11. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

12. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), good operation practices and firing refinery fuel gas that complies with 40 CFR Part 60, Subpart Ja as BAT for SO_2.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Addendum 1
Method Of Compliance Worksheet

SECTION 1. APPLICABLE REQUIREMENT

Federal Tax Id: *45-5201144* **Firm Name:** *Monroe Energy, LLC*

Plant Code: *45-5201144* **Plant Name:** *Trainer Refinery, PA*

Applicable Requirement for: (please check only one box below)

☐ **The entire site**

☒ **A group of sources, Group ID:** ***Proposed Process Heaters (H-01 and H-02)***

☐ **A single source, Unit ID:**

☐ **Alternative Scenario, Scenario Name:**

Citation #: *25 Pa. Code §127.12(a)(5) – PM BAT*

Compliance Method based upon: ☒ **Applicable Requirement** ☐ **Gap Filling Requirement**

Method of Compliance Type: (Check all that applies and complete all appropriate sections below)

☐ **Monitoring** ☐ **Testing** ☐ **Reporting**

☐ **Record Keeping** ☒ **Work Practice Standard**

Section 2: Monitoring

13. Monitoring device type (stack test, CEM, etc.): *N/A*

14. Monitoring device location: *N/A*

Describe all parameters being monitored along with the frequency and duration of monitoring each parameter:

15. How will data be reported: *N/A*

Section 3: Testing

13. Reference Test Method Description: *N/A*

14. Reference Test Method Citation: *N/A*

Section 4: Record Keeping

Describe what parameters will be recorded and the frequency of recording:

N/A

Section 5: Reporting

Describe what is to be reported and the frequency of reporting:

N/A

15. Reporting start date:

Section 6: Work Practice Standard

Describe any work practice standards:

Monroe proposes compliance with the Boiler MACT work practice standards (i.e., burner maintenance and annual combustion tuning), proper design, operation and good combustion and engineering practices as BAT for PM emissions.

Monroe Energy, LLC
4101 Post Road
Trainer, PA 19061
(610) 364-8000

May 14, 2015

FedEx: 7736 0305 8668

James Rebarchak
Regional Air Program Manager
Commonwealth of Pennsylvania
Department of Environmental Protection
2 East Main Street
Norristown, PA 19401

RE: Semi-Annual Air Compliance History Report
Monroe Energy, LLC – Trainer Refinery
Title V Operating Permit No. 23-00003

Dear Mr. Rebarchak:

In accordance with 25 Pa. Code §127.412(j), Monroe Energy, LLC is submitting the enclosed updated Air Pollution Control Act Compliance Review Form. Monroe Energy updates the form semi-annually.

Please feel free to contact me at (610) 364-8528 if you have any questions regarding this submittal.

Sincerely,
MONROE ENERGY, LLC

David M. Chetkowski, P.E.
Air Program Lead

Enclosure

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

AIR POLLUTION CONTROL ACT COMPLIANCE REVIEW FORM

Fully and accurately provide the following information, as specified. Attach additional sheets as necessary.

Type of Compliance Review Form Submittal (check all that apply)

☐ Original Filing
☒ Amended Filing

Date of Last Compliance Review Form Filing: 11/20/2014

Type of Submittal

☐ New Plan Approval ☐ New Operating Permit ☐ Renewal of Operating Permit
☐ Extension of Plan Approval ☐ Change of Ownership ☒ Periodic Submission (@ 6 mos)
☐ Other: _____

SECTION A. GENERAL APPLICATION INFORMATION

Name of Applicant/Permittee/("applicant")
(non-corporations-attach documentation of legal name)
Monroe Energy, LLC

Address 4101 Post Road
Trainer, PA 19061

Telephone 610-364-8000 **Taxpayer ID#** 45-5201144

Permit, Plan Approval or Application ID# TVOP-23-00003

Identify the form of management under which the applicant conducts its business (check appropriate box)

☐ Individual ☐ Syndicate ☐ Government Agency
☐ Municipality ☐ Municipal Authority ☐ Joint Venture
☐ Proprietorship ☐ Fictitious Name ☐ Association
☐ Public Corporation ☐ Partnership ☐ Other Type of Business, specify below:
☒ Private Corporation ☐ Limited Partnership

Describe below the type(s) of business activities performed.

Petroleum refining - receipt, process, storage, and transportation of crude oil, refined products, intermediates, byproducts, and other materials related to refining crude oil into petroleum products.

SECTION B. GENERAL INFORMATION REGARDING "APPLICANT"

If applicant is a corporation or a division or other unit of a corporation, provide the names, principal places of business, state of incorporation, and taxpayer ID numbers of all domestic and foreign parent corporations (including the ultimate parent corporation), and all domestic and foreign subsidiary corporations of the ultimate parent corporation with operations in Pennsylvania. Please include all corporate divisions or units, (whether incorporated or unincorporated) and privately held corporations. (A diagram of corporate relationships may be provided to illustrate corporate relationships.) Attach additional sheets as necessary.

Unit Name	Principal Places of Business	State of Incorporation	Taxpayer ID	Relationship to Applicant
Delta Air Lines, Inc.	Atlanta, GA	Delaware	58-0218548	Parent
Monroe Energy, LLC	Trainer, PA	Delaware	45-5201144	Applicant: 100% owned by Parent
MIPC, LLC	Aston, PA and Philadelphia, PA	Delaware	45-5201987	100% owned by Parent

SECTION C. SPECIFIC INFORMATION REGARDING APPLICANT AND ITS "RELATED PARTIES"

Pennsylvania Facilities. List the name and location (mailing address, municipality, county), telephone number, and relationship to applicant (parent, subsidiary or general partner) of applicant and all Related Parties' places of business, and facilities in Pennsylvania. Attach additional sheets as necessary.

Unit Name	Street Address	County and Municipality	Telephone No.	Relationship to Applicant
Trainer Refinery	4101 Post Road	Delaware/Trainer Borough	610-364-8000	Applicant
Philadelphia Terminal	4210 G Street	Philadelphia/ Philadelphia	215-533-7310	Owned and Operated by MIPC, LLC
Chelsea Terminal	920 Cherry Tree Rd	Delaware/Aston Township	610-485-5410	Owned and Operated by MIPC, LLC

Provide the names and business addresses of all general partners of the applicant and parent and subsidiary corporations, if any.

Name	Business Address
Delta Air Lines, Inc.	P.O. Box 20706, Atlanta, GA 30320
MIPC, LLC	920 Cherry Tree Rd., Aston, PA 19014

List the names and business address of persons with overall management responsibility for the process being permitted (i.e. plant manager).

Name	Business Address
Jeffrey K. Warmann, CEO & President	4101 Post Rd, Trainer, PA 19061

Plan Approvals or Operating Permits. List all plan approvals or operating permits issued by the Department or an approved local air pollution control agency under the APCA to the applicant or related parties that are currently in effect or have been in effect at any time 5 years prior to the date on which this form is notarized. This list shall include the plan approval and operating permit numbers, locations, issuance and expiration dates. Attach additional sheets as necessary.

Air Contamination Source	Plan Approval/ Operating Permit#	Location	Issuance Date	Expiration Date
Trainer Refinery	TVOP-23-00003	Trainer	06/25/2014	06/25/2019
Trainer Refinery	PA-23-0003S	Trainer	08/03/2011	08/03/2015
Trainer Refinery	PA-23-0003Y	Trainer	10/14/2014	04/14/2016
Trainer Refinery	See Attachment B			
Chelsea Terminal	See Attachment B			
Philadelphia Terminal	See Attachment B			

Compliance Background. (Note: Copies of specific documents, if applicable, must be made available to the Department upon its request.) List all documented conduct of violations or enforcement actions identified by the Department pursuant to the APCA, regulations, terms and conditions of an operating permit or plan approval or order by applicant or any related party, using the following format grouped by source and location in reverse chronological order. Attach additional sheets as necessary. See the definition of "documented conduct" for further clarification. Unless specifically directed by the Department, deviations which have been previously reported to the Department in writing, relating to monitoring and reporting, need not be reported.

Date	Location	Plan Approval/ Operating Permit#	Nature of Documented Conduct	Type of Department Action	Status: Litigation Existing/Continuing or Corrected/Date	Dollar Amount Penalty
See Attach-ment C						$
						$
						$
						$
						$
						$
						$
						$
						$
						$

List all incidents of deviations of the APCA, regulations, terms and conditions of an operating permit or plan approval or order by applicant or any related party, using the following format grouped by source and location in reverse chronological order. This list must include items both currently known and unknown to the Department. Attach additional sheets as necessary. See the definition of "deviations" for further clarification.

Date	Location	Plan Approval/ Operating Permit#	Nature of Deviation	Incident Status: Litigation Existing/Continuing Or Corrected/Date
See Attachment D				

<u>CONTINUING OBLIGATION</u>. Applicant is under a continuing obligation to update this form using the Compliance Review Supplemental Form if any additional deviations occur between the date of submission and Department action on the application.

VERIFICATION STATEMENT
Subject to the penalties of Title 18 Pa.C.S. Section 4904 and 35 P.S. Section 4009(b)(2), I verify under penalty of law that I am authorized to make this verification on behalf of the Applicant/Permittee. I further verify that the information contained in this Compliance Review Form is true and complete to the best of my belief formed after reasonable inquiry. I further verify that reasonable procedures are in place to ensure that "documented conduct" and "deviations" as defined in 25 Pa Code Section 121.1 are identified and included in the information set forth in this Compliance Review Form.
Signature — 5/18/2015 Date
Jeffrey K. Warmann Name (Print or Type)
CEO & President Title

Attachment A
Air Pollution Control Act Compliance Review Form
List of Parent Companies and Subsidiaries with Operations in PA

As of the date of this report, the only wholly-owned Delta Air Lines, Inc. facilities which presently operate or own property in Pennsylvania are Monroe Energy, LLC and MIPC, LLC whose locations are noted on the Compliance Review Form.

Attachment B
Air Pollution Control Act Compliance Review Form
Plan Approvals or Operating Permits [(a)]

Air Contamination Source	Plan Approval/ Operating Permit #	Location	Issuance Date	Expiration Date
Trainer Refinery	PA-23-0003J	Trainer	06/20/2008	Incorporated into TVOP on 03/12/2010
Trainer Refinery	PA-23-0003K	Trainer	05/01//2009	Incorporated into TVOP on 03/12/2010
Trainer Refinery	PA-23-0003M	Trainer	06/22/2009	Incorporated into TVOP on 10/28/2011
Trainer Refinery	PA-23-0003N	Trainer	07/14/2009	Incorporated into TVOP on 03/12/2010
Trainer Refinery	PA-23-0003O	Trainer	09/21/2009	Withdrawn on 03/21/2011
Trainer Refinery	PA-23-0003P	Trainer	12/17/2009	Incorporated into TVOP in 07/01/2013
Trainer Refinery	PA-23-0003T	Trainer	10/27/2011	Withdrawn on 11/19/2012
Trainer Refinery	PA-23-0003U	Trainer	11/09/2011	Withdrawn on 05/09/2014
Trainer Refinery	PA-23-0003V	Trainer	04/12/2012	Withdrawn on 05/30/2013
Trainer Refinery	PA-23-0003W	Trainer	09/24/2013	Incorporated into TVOP in 09/22/2014
Trainer Refinery	PA-23-0003X	Trainer	03/13/2014	Incorporated into TVOP in 09/22/2014
Chelsea Terminal	TVOP 23-00041	Aston	11/28/2012	11/28/2017
Philadelphia Terminal	TVOP V11-018	Philadelphia	12/31/2012	12/31/2017

(a) Plan Approvals and Operating permits that were active or in effect in the last 5 years.

Attachment C
Air Pollution Control Act Compliance Review Form
Compliance Background

Date [1]	Location [2]	Plan Approval / Operating Permit #	Nature of Documented Conduct	Type of Department Action	Status: Litigation Existing / Continuing or Corrected / Date	Dollar Amount Penalty
03/24/2015	Trainer Refinery	TVOP 23-00003	NOV for Platformer catalyst exceeding chloride limits.	NOV	No action Required.	None
11/17/2014	Trainer Refinery	TVOP 23-00003	Penalty assesment for all NOVs issued in 2014.	Penalty	Corrected on 11/17/2014	$15,268
10/03/2014	Trainer Refinery	TVOP 23-00003	NOV for failure to maintain records pursuant to RICE MACT.	NOV	Corrected	Included in 10/14/2014 assessment.
07/30/2014	Trainer Refinery	TVOP 23-00003	NOV for failure to maintain records and delinquent report pursuant to BWON.	NOV	Corrected	
06/06/2014	Trainer Refinery	TVOP 23-00003	NOV for failure to maintain records pursuant to storage tank requirements.	NOV	Corrected	
05/16/2014	Trainer Refinery	TVOP 23-00003	NOV for failure to log visible emission observations.	NOV	No action Required.	
04/28/2014	Trainer Refinery	TVOP 23-00003	NOV for failure to include date on report.	NOV	Corrected on 05/09/2014	
03/24/2014	Trainer Refinery	TVOP 23-00003	Penalty Assesment for 08/02/2013 NOV.	Penalty	Settled on 04/08/2014	$6,000
01/30/2014	Trainer Refinery	TVOP 23-00003	MACT Group 1 Tank vented directly to atmosphere, bypassing control by the Main Flare, when a PSV malfunctioned and opened below its setpoint.	NOV	Corrected on 01/30/2014	Included in 10/14/2014 assessment.
08/02/2013	Trainer Refinery	TVOP 23-00003	Failure to sample Platformer catalyst in accordance with OMMP.	NOV	Corrected on 08/21/2013	Included in 3/24/2014 assessment.
04/18/2012	Trainer Refinery	TVOP 23-00003	NOV for Use of a pump without mechanical seals on two occasions.	NOV	Settled	None
11/15/2010	Trainer Refinery	TVOP 23-00003	NOV for NSPS QQQ Repairs	NOV	Settled	$11,100
07/30/2010	Trainer Refinery	TVOP 23-00003	NOV for Platformer HCl Emission Records	NOV	Settled	
05/12/2010	Trainer Refinery	TVOP 23-00003	CACP for CEMS	Penalty	Settled	$96,000
05/12/2010	Trainer Refinery	TVOP 23-00003	CACP for FCCU Emissions and Flaring	Penalty	Settled	$20,000

[1] Monroe Energy, LLC purchased the Trainer Refinery from Phillips66 on June 22, 2012.
[2] See Reports submitted by Monroe transportation facilities (Chelsea and Philadelphia Terminals) for compliance background.

Attachment D
Air Pollution Control Act Compliance Review Form
List of Deviations

Monroe Energy, LLC informs the Department on a regular basis regarding incidents and deviations through various reports, including but not limited to, CEMS reports, LDAR reports, Title V deviation and certification reports, incident reports, and Refinery MACT reports.

ATTACHMENT C
EMISSIONS INVENTORY TABLES

Table C-1
Monroe Energy, LLC - Trainer, PA Refinery
PSD Baseline Actual Emission Rates

Emission Unit		Emission Rate (tpy)														
		PM	PM_{10}	$PM_{2.5}$	SO_2	NO_2	VOC	CO	Lead	H_2S	TRS	CO_2	N_2O	CH_4	Total GHG	CO_2e[(a)]
101	FCC Unit	43.06	63.93	56.61	46.18	297.01	3.18	15.63	2.47E-04	-	-	499,375.51	2.93	14.67	499,393.10	500,614.22
733	FCCU Feed Heater	0.10	0.42	0.42	0.44	1.76	0.30	0.93	3.73E-05	0.01	0.01	16,695.75	0.17	0.85	16,696.77	16,767.57
735	Kerosene/HCN HTU Feed Heater	0.22	0.36	0.36	0.39	6.41	0.26	3.23	1.82E-05	2.74E-03	2.77E-03	4,319.92	0.04	0.22	4320.18	4,338.50
736	Diesel HTU Heater	0.24	0.42	0.42	0.49	10.39	0.06	3.49	3.35E-05	0.01	0.01	13,802.45	0.14	0.70	13,803.30	13,861.83
741	D2/VGO Hydrotreater Feed Heater	0.43	0.33	0.33	0.64	8.01	0.44	7.44	4.78E-05	0.01	0.01	23,209.06	0.24	1.18	23,210.47	23,308.90
737	Naphtha HDS Heater	1.19	1.87	1.87	1.96	26.07	1.35	20.86	1.22E-04	0.02	0.02	33,037.72	0.34	1.68	33039.73	33,179.83
738	Platformer Feed Heater	8.45	13.44	13.44	14.10	147.14	9.73	1.57	9.42E-04	0.19	0.19	284,157.46	2.89	14.45	284,174.80	285,379.82
739	Isocracker 1st Stage Heater	0.55	0.96	0.96	1.01	15.65	0.70	11.21	6.49E-05	0.01	0.01	14,711.55	0.15	0.75	14712.45	14,774.84
740	Isocracker Splitter Reboiler	0.69	1.19	1.19	1.25	15.70	0.86	13.38	7.83E-05	0.01	0.01	18,382.52	0.19	0.93	18383.64	18,461.59
742	VCD 541 VAC Heater	0.18	0.71	0.71	0.77	13.38	0.51	7.34	4.31E-05	0.01	0.01	13,793.59	0.14	0.70	13794.44	13,852.93
743	VCD 542 VAC Heater	0.44	0.78	0.78	0.44	4.48	0.02	0.01	2.38E-05	0.01	0.01	17,771.31	0.18	0.90	17772.39	17,847.75
746	VCD 544 VAC Heater	1.35	2.88	2.88	2.37	12.53	2.19	1.34	1.40E-04	0.02	0.02	35,464.65	0.36	1.80	35466.81	35,617.21
744	ACD 543 Crude Heater	4.32	7.22	7.22	7.89	28.30	5.23	81.32	4.82E-04	0.09	0.09	143,860.54	1.46	7.31	143869.31	144,479.38
745	ACD 544 Crude Heater	4.68	7.59	7.59	8.29	32.82	5.49	83.63	4.91E-04	0.09	0.09	145,398.35	1.48	7.39	145407.22	146,023.81
34	Boiler 9	0.53	1.69	1.51	1.93	4.14	0.11	1.17	4.51E-04	0.06	0.06	72,880.82	0.14	1.37	72,882.33	72,956.09
35	Boiler 10	0.38	1.06	1.01	1.91	3.89	0.10	8.72	4.32E-04	0.06	0.06	83,481.92	0.16	1.57	83,483.65	83,568.14
102	SRU	0.10	0.38	0.38	19.27	5.22	0.24	3.56	2.04E-05	0.00	-	2,852.70	0.06	5.88E-03	2,852.76	2,870.38
103	Main Flare	4.05	5.04	5.04	10.04	10.19	33.12	58.11	1.14E-04	14.23	-	51,382.53	0.96	8.75	51,392.24	51,887.23
165	Tank 93	-	-	-	-	-	2.46	-	-	-	-	-	-	-	-	-
166	Tank 94	-	-	-	-	-	1.61	-	-	-	-	-	-	-	-	-
126	Tank 95	-	-	-	-	-	2.13	-	-	-	-	-	-	-	-	-
127	Tank 96	-	-	-	-	-	3.27	-	-	-	-	-	-	-	-	-
137	Tank 152	-	-	-	-	-	1.38	-	-	-	-	-	-	-	-	-
138	Tank 153	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-	-
140	Tank 155	-	-	-	-	-	0.13	-	-	-	-	-	-	-	-	-
142	Tank 157	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-	-
300	Tank 158 (Source ID 193)	-	-	-	-	-	3.50	-	-	-	-	-	-	-	-	-
143	Tank 159	-	-	-	-	-	3.32	-	-	-	-	-	-	-	-	-
194	Tank 160	-	-	-	-	-	4.86	-	-	-	-	-	-	-	-	-
144	Tank 161	-	-	-	-	-	2.70	-	-	-	-	-	-	-	-	-
145	Tank 162	-	-	-	-	-	0.87	-	-	-	-	-	-	-	-	-
146	Tank 163	-	-	-	-	-	1.60	-	-	-	-	-	-	-	-	-
147	Tank 164	-	-	-	-	-	2.53	-	-	-	-	-	-	-	-	-
148	Tank 165	-	-	-	-	-	3.09	-	-	-	-	-	-	-	-	-
149	Tank 166	-	-	-	-	-	2.16	-	-	-	-	-	-	-	-	-
150	Tank 168	-	-	-	-	-	1.53	-	-	-	-	-	-	-	-	-
152	Tank 170	-	-	-	-	-	3.02	-	-	-	-	-	-	-	-	-
155	Tank 174	-	-	-	-	-	4.09	-	-	-	-	-	-	-	-	-
156	Tank 175	-	-	-	-	-	5.35	-	-	-	-	-	-	-	-	-
157	Tank 178	-	-	-	-	-	4.53	-	-	-	-	-	-	-	-	-
160	Tank 181	-	-	-	-	-	3.03	-	-	-	-	-	-	-	-	-
161	Tank 182	-	-	-	-	-	6.52	-	-	-	-	-	-	-	-	-
163	Tank 185	-	-	-	-	-	7.02	-	-	-	-	-	-	-	-	-
164	Tank 186	-	-	-	-	-	4.75	-	-	-	-	-	-	-	-	-
Total Baseline Emissions (tons/24 months)		**141.92**	**220.54**	**205.42**	**238.75**	**1,286.16**	**279.26**	**645.90**	**7.58E-03**	**29.70**	**1.25**	**2,949,157**	**23.95**	**129.63**	**2,949,310.23**	**2,959,534.50**
Total Baseline Actual Emissions		**70.96**	**110.27**	**102.71**	**119.38**	**643.08**	**139.63**	**322.95**	**3.79E-03**	**14.85**	**0.62**	**1,474,578**	**11.98**	**64.81**	**1,474,655.12**	**1,479,767.25**
Baseline Period		**Aug-13**	**Aug-13**	**Aug-13**	**Aug-13**	**Aug-13**	**Aug-13**	**Jan-13**	**Nov-12**	**Jan-09**	**Apr-09**	**Jun-09**	**Jun-09**	**Jun-09**	**Jun-09**	**Jun-09**
		Jul-15	**Jul-15**	**Jul-15**	**Jul-15**	**Jul-15**	**Jul-15**	**Dec-14**	**Oct-14**	**Dec-10**	**Mar-11**	**May-11**	**May-11**	**May-11**	**May-11**	**May-11**

[(a)] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-2
Monroe Energy, LLC - Trainer, PA Refinery
NNSR Baseline Actual Emission Rates

Emission Unit		Emission Rate (tpy)				
		$PM_{2.5}$ NNSR			Ozone NNSR	
		$PM_{2.5}$	SO_2	NO_X	NO_X	VOC
101	FCC Unit	56.61	46.18	297.01	297.01	3.18
733	FCCU Feed Heater	0.42	0.44	1.76	1.76	0.30
735	Kerosene/HCN HTU Feed Heater	0.36	0.39	6.41	6.41	0.26
736	Diesel HTU Heater	0.42	0.49	10.39	10.39	0.06
741	D2/VGO Hydrotreater Feed Heater	0.33	0.64	8.01	8.01	0.44
737	Naphtha HDS Heater	1.87	1.96	26.07	26.07	1.35
738	Platformer Feed Heater	13.44	14.10	147.14	147.14	9.73
739	Isocracker 1st Stage Heater	0.96	1.01	15.65	15.65	0.70
740	Isocracker Splitter Reboiler	1.19	1.25	15.70	15.70	0.86
742	VCD 541 VAC Heater	0.71	0.77	13.38	13.38	0.51
743	VCD 542 VAC Heater	0.78	0.44	4.48	4.48	0.02
746	VCD 544 VAC Heater	2.88	2.37	12.53	12.53	2.19
744	ACD 543 Crude Heater	7.22	7.89	28.30	28.30	5.23
745	ACD 544 Crude Heater	7.59	8.29	32.82	32.82	5.49
34	Boiler 9	1.51	1.93	4.14	4.14	0.11
35	Boiler 10	1.01	1.91	3.89	3.89	0.10
102	SRU	0.38	19.27	5.22	5.22	0.24
103	Main Flare	5.04	10.04	10.19	10.19	33.12
165	Tank 93	-	-	-	-	2.46
166	Tank 94	-	-	-	-	1.61
126	Tank 95	-	-	-	-	2.13
127	Tank 96	-	-	-	-	3.27
137	Tank 152	-	-	-	-	1.38
138	Tank 153	-	-	-	-	0.15
140	Tank 155	-	-	-	-	0.13
142	Tank 157	-	-	-	-	0.15
300	Tank 158 (Source ID 193)	-	-	-	-	3.50
143	Tank 159	-	-	-	-	3.32
194	Tank 160	-	-	-	-	4.86
144	Tank 161	-	-	-	-	2.70
145	Tank 162	-	-	-	-	0.87
146	Tank 163	-	-	-	-	1.60
147	Tank 164	-	-	-	-	2.53
148	Tank 165	-	-	-	-	3.09
149	Tank 166	-	-	-	-	2.16
150	Tank 168	-	-	-	-	1.53
152	Tank 170	-	-	-	-	3.02
155	Tank 174	-	-	-	-	4.09
156	Tank 175	-	-	-	-	5.35
157	Tank 178	-	-	-	-	4.53
160	Tank 181	-	-	-	-	3.03
161	Tank 182	-	-	-	-	6.52
163	Tank 185	-	-	-	-	7.02
164	Tank 186	-	-	-	-	4.75
Total Baseline Emissions (tons/24 months)		**205.42**	**238.75**	**1,286.16**	**1,286.16**	**279.26**
Total Baseline Actual Emissions		**102.71**	**119.38**	**643.08**	**643.08**	**139.63**
Baseline Period		**Aug-13**	**Aug-13**	**Aug-13**	**Aug-13**	**Aug-13**
		Jul-15	**Jul-15**	**Jul-15**	**Jul-15**	**Jul-15**

Table C-3
Monroe Energy, LLC - Trainer, PA Refinery
Projected Future Operations

Emission Unit		Projected Heat Duty[a]		Projected Annual Hours of Operation
		MMBtu/hr	MMBtu/yr	
Existing Units				
101	FCC Unit[b]	-	-	8,760
733	FCCU Feed Heater	23	201,480	8,760
735	Kerosene/HCN HTU Feed Heater	8.3	72,708	8,760
736	Diesel HTU Heater	20	175,200	8,760
741	D2/VGO Hydrotreater Feed Heater	18	157,680	8,760
737	Naphtha HDS Heater	76	665,760	8,760
738	Platformer Feed Heater	493	4,318,680	8,760
739	Isocracker 1st Stage Heater	33	289,080	8,760
740	Isocracker Splitter Reboiler	44	385,440	8,760
742	VCD 541 VAC Heater	36	315,360	8,760
743	VCD 542 VAC Heater	20	175,200	8,760
746	VCD 544 VAC Heater	71	621,960	8,760
744	ACD 543 Crude Heater	260	2,277,600	8,760
745	ACD 544 Crude Heater	260	2,277,600	8,760
34	Boiler 9	-	-	8,760
35	Boiler 10	-	-	8,760
102	SRU	-	-	8,760
103	Main Flare	-	-	8,760
165	Tank 93	-	-	8,760
166	Tank 94	-	-	8,760
126	Tank 95	-	-	8,760
127	Tank 96	-	-	8,760
137	Tank 152	-	-	8,760
138	Tank 153	-	-	8,760
140	Tank 155	-	-	8,760
142	Tank 157	-	-	8,760
300	Tank 158 (Source ID 193)	-	-	8,760
143	Tank 159	-	-	8,760
194	Tank 160	-	-	8,760
144	Tank 161	-	-	8,760
145	Tank 162	-	-	8,760
146	Tank 163	-	-	8,760
147	Tank 164	-	-	8,760
148	Tank 165	-	-	8,760
149	Tank 166	-	-	8,760
150	Tank 168	-	-	8,760
152	Tank 170	-	-	8,760
155	Tank 174	-	-	8,760
156	Tank 175	-	-	8,760
157	Tank 178	-	-	8,760
160	Tank 181	-	-	8,760
161	Tank 182	-	-	8,760
163	Tank 185	-	-	8,760
164	Tank 186	-	-	8,760
New Units				
-	Feed Heater 1	99.6	872,496	8,760
-	Feed Heater 2	44.2	387,192	8,760
-	Cooling Tower	-	-	8,760
-	Fugitives	-	-	8,760

[a] Based on 195,000 BPD crude rate from 10 year plan.

[b] Emissions are based on pounds of coke burned in the catalyst regenerator instead of fuel. Please see table C-4 for more details.

Table C-4
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the FCC Unit - Source ID 101

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	0.45	lb/10^3 lb coke	Stack test data from 2015	19.32	84.62
Condensable PM	0.15	lb/10^3 lb coke	Stack test data from 2013.	6.51	28.52
Total PM_{10}	0.59	lb/10^3 lb coke	Stack test data from 2013 and Emission Estimation Protocol for Petroleum Refineries Version 2.1.1, May 2011, Table 5-2 Default Size Distribution for Filterable PM from CCU.	25.25	110.60
Total $PM_{2.5}$	0.52	lb/10^3 lb coke	Stack test data from 2013 and Emission Estimation Protocol for Petroleum Refineries Version 2.1.1, May 2011, Table 5-2 Default Size Distribution for Filterable PM from CCU.	21.97	96.21
SO_2	0.48	lb/10^3 lb coke	2015 CEMS data.	20.28	88.82
NO_X	2.32	lb/10^3 lb coke	2015 CEMS data.	98.75	432.52
VOC	0.73	lb/hr	Emission factor from historical stack testing.	0.73	3.20
CO	8.77E-02	lb/10^3 lb coke	2015 CEMS data.	3.73	16.35
Lead	N/A	N/A	No available emissions factor.	-	-
H_2S	N/A	N/A	No available emissions factor.	-	-
TRS	N/A	N/A	No available emissions factor.	-	-
CO_2	102.41	kg/MMBtu	40 CFR Part 98 Subpart Y. Equation Y-6[b]	172,322.68	754,773.34
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart Y, Equation Y-10	1.01	4.42
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart Y, Equation Y-9	5.05	22.11
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	172,328.74	754,800
CO_2e[b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	172,750	756,644

[a] Particle size distributions per the *Emission Estimation Protocol for Petroleum Refineries Version 2.1.1* , May 2011, Table 5-2 *Default Size Distribution for Filterable PM from CCU; CCU with post-regenerator PM control device (tertiary cyclone, wet scrubber, ESP or fabric filter).*

Pollutant	Fraction	Units/Notes
Filterable PM_{10}	97	%
Filterable $PM_{2.5}$	80	%

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Projected Future Fuel Usage	42,554	lb coke burned/hr
Operating Hours	8,760	hr/yr
Conversion Factor 1	2,000	lb/ton
Conversion Factor 2	1,000	lb/M lb
Conversion Factor 3	1.10E-03	tons/kg

[b] CO_2 emissions are based upon the following parameters, in accordance with 40 CFR Part 98 Subpart Y, Equation Y-6:

Parameter	Value	Units/Notes
Future Exhaust Flowrate	98,362	dscfm
Future CO_2 Fuel Gas Content	17.24	% by volume
Future CO Fuel Gas Content	7.95	% by volume
Molecular Weight of CO2	44.00	kg/kg-mol
Molar Volume Conversion Factor	836.60	scf/kg-mol at 60 deg and 14.7 psia
Conversion Factor 1	60	min/hr
Conversion Factor 2	2.20	lb/kg

[c] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-5
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from FCCU Feed Heater - Source ID 733

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.04	0.18
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.16	0.72
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.16	0.72
SO_2	0.1	gr/dscf	Based on short-term allowed H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.31	0.78
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.03	lb/MMBtu	Stack test data from 2013.	0.69	3.02
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.12	0.52
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	1.81	7.93
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.08E-05	4.72E-05
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	1.96E-03	8.56E-03
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	1.96E-03	8.56E-03
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	2,992	13,104
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.03	0.13
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.15	0.67
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	2,992	13,104
CO_2e[b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	3,005	13,160

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	23	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,068	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-6
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the Kerosene/HCN HTU Feed Heater - Source ID 735

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.01	0.06
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.06	0.25
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.06	0.25
SO_2	0.1	gr/dscf	Based on short-term allowed H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.11	0.28
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.124	lb/MMBtu	Stack test data from 2005.	1.03	4.51
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.04	0.18
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	0.64	2.81
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	3.82E-06	1.67E-05
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	7.06E-04	3.09E-03
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	7.06E-04	3.09E-03
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	1,080	4,729
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.01	0.05
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.05	0.24
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	1,080	4,729
CO_2e [b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	1,084	4,749

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	8.3	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,086	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-7
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the Diesel HTU Heater - Source ID 736

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	0.0012	lb/MMBtu	Stack test data from 2013.	0.02	0.11
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.14	0.62
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.14	0.62
SO_2	0.1	gr/dscf	Based on short-term allowed H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.26	0.67
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.158	lb/MMBtu	Stack test data from 2013.	3.16	13.84
VOC	0.0045	lb/MMBtu	Stack test data from 2013.	0.09	0.39
CO	0.002	lb/MMBtu	Stack test data from 2013.	0.04	0.18
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	9.25E-06	4.05E-05
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	1.70E-03	7.45E-03
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	1.70E-03	7.45E-03
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	2,601	11,394
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.03	0.12
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.13	0.58
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	2,602	11,395
CO_2e [b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	2,613	11,443

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	20	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,081	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-8
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the D2/VGO Hydrotreater Feed Heater - Source ID 741

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.03	0.15
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.13	0.59
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.13	0.59
SO_2	0.1	gr/dscf	Based on allowed short-term H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.25	0.61
	48	ppmv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the south side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	100	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	1.76	7.71
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.10	0.42
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	1.48	6.48
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	8.80E-06	3.86E-05
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	1.53E-03	6.70E-03
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	1.53E-03	6.70E-03
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	2,341	10,255
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.02	0.10
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.12	0.52
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	2,341	10,256
CO_2e[b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	2,351	10,299

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	18	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,023	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-9
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the Naphtha HDS Heater - Source ID 737

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.14	0.61
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.56	2.43
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.56	2.43
SO_2	0.1	gr/dscf	Based on allowed short-term H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	1.04	2.55
	48	ppmv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the south side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.1	lb/MMBtu	Stack Test Data from 1994	7.60	33.29
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.40	1.76
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	6.14	26.88
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	3.65E-05	1.60E-04
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	6.46E-03	0.03
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	6.46E-03	0.03
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	9,886	43,299
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.10	0.44
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.50	2.20
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	9,886	43,301
CO_2e [b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	9,928	43,485

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	76	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,040	MMBtu/MMSCF
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-10
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the Platformer Feed Heater - Source ID 738

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.93	4.06
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	3.71	16.23
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	3.71	16.23
SO_2	0.1	gr/dscf	Based on allowed short-term H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	6.97	17.03
	48	ppmv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the south side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.086	lb/MMBtu	Stack Testing Data	42.40	185.70
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	2.68	11.75
CO	3.30E-05	lb/MMBtu	Stack Testing Data	0.03	0.15
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	2.44E-04	1.07E-03
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.04	0.18
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.04	0.18
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	64,126	280,871
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.65	2.86
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	3.26	14.28
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	64129.69	280,888
CO_2e[b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	64401.63	282,079

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	493	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,011	MMBtu/MMSCF
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-11
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the Isocracker 1st Stage Heater - Source ID 739

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.06	0.26
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.24	1.03
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.24	1.03
SO_2	0.1	gr/dscf	Based on allowed short-term H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.44	1.08
	48	ppmv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the south side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.116	lb/MMBtu	Stack test data from 2008.	3.83	16.77
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.17	0.75
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	2.61	11.43
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.55E-05	6.80E-05
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	2.81E-03	0.01
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	2.81E-03	0.01
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	4,292	18,801
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.04	0.19
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.22	0.96
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	4292.66	18,802
CO_2e [b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	4310.86	18,882

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	33	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,063	MMBtu/MMSCF
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-12
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the Isocracker Splitter Reboiler - Source ID 740

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.08	0.34
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.31	1.37
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.31	1.37
SO_2	0.1	gr/dscf	Based on allowed short-term H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.59	1.44
	48	ppmv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the south side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	100	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	4.12	18.05
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.23	0.99
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	3.46	15.17
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	2.06E-05	9.03E-05
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	3.74E-03	0.02
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	3.74E-03	0.02
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	5,723	25,068
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.06	0.25
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.29	1.27
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	5723.54	25,069
CO_2e[b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	5747.81	25,175

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	44	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,067	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-13
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the VCD 541 VAC Heater - Source ID 742

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.06	0.27
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.24	1.06
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.24	1.06
SO_2	0.1	gr/dscf	Based on short-term allowed H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.46	1.16
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.13	lb/MMBtu	Stack test data from 1994.	4.68	20.50
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.18	0.77
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	2.68	11.76
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.60E-05	7.00E-05
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	3.06E-03	0.01
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	3.06E-03	0.01
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	4,683	20,510
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.05	0.21
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.24	1.04
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	4682.90	20,511
CO_2e [b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	4702.76	20,598

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	36	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,127	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-14
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the VCD 542 VAC Heater - Source ID 743

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.04	0.15
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.14	0.62
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.14	0.62
SO_2	0.1	gr/dscf	Based on short-term allowed H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.26	0.67
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.077	lb/MMBtu	Stack test data from 1999.	1.54	6.75
VOC	0.00032	lb/MMBtu	Stack test data from 1999.	6.40E-03	0.03
CO	0.00024	lb/MMBtu	Stack test data from 1999.	4.80E-03	0.02
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	9.27E-06	4.06E-05
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	1.70E-03	7.45E-03
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	1.70E-03	7.45E-03
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	2,601	11,394
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.03	0.12
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.13	0.58
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	2601.61	11,395
CO_2e [b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	2612.64	11,443

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	20	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,079	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-15
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the VCD 544 VAC Heater - Source ID 746

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.12	0.55
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.50	2.19
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.50	2.19
SO_2	0.1	gr/dscf	Based on short-term allowed H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	0.94	2.39
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.04	lb/MMBtu	Stack test data from 2013.	2.84	12.44
VOC	0.007	lb/MMBtu	Stack test data from 2007.	0.50	2.18
CO	0.017	lb/MMBtu	Stack test data from 2006.	1.21	5.29
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	3.29E-05	1.44E-04
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	6.04E-03	0.03
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	6.04E-03	0.03
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	9,235	40,450
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.09	0.41
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.47	2.06
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	9,236	40,452
CO_2e [b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	9,275	40,624

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	71	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,080	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-16
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the ACD 543 Crude Heater - Source ID 744

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.46	2.01
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.83	8.02
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.83	8.02
SO_2	0.1	gr/dscf	Based on short-term allowed H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	3.44	8.77
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.04	lb/MMBtu	Stack test data from 2003.	10.40	45.55
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.33	5.81
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-1	20.24	88.66
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.20E-04	5.28E-04
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.02	0.10
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.02	0.10
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	33,819	148,127
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.34	1.51
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	1.72	7.53
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	33820.93	148,136
CO_2e[b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	33964.35	148,764

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	260	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,079	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-17
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the ACD 544 Crude Heater - Source ID 745

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	1.9	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.46	2.00
Total PM_{10}	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.83	8.01
Total $PM_{2.5}$	7.6	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.83	8.01
SO_2	0.1	gr/dscf	Based on short-term allowed H_2S content in refinery fuel gas, found at 40 CFR §§60.104(a)(1). Assumed full conversion of H_2S to SO_2.	3.44	8.75
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.04	lb/MMBtu	Stack test data from 2003.	11.44	50.11
VOC	5.5	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.32	5.80
CO	84	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	20.22	88.55
Lead	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.20E-04	5.27E-04
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.02	0.10
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.02	0.10
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	33,819	148,127
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	0.34	1.51
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	1.72	7.53
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	33820.93	148,136
CO_2e[b]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	33964.35	148,764

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Projected Heat Duty	260	MMBtu/hr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,080	MMBtu/MMscf
Molecular Weight SO_2	64.00	lb/lb-mol
Conversion Factor 2	2.20	lb/kg
Conversion Factor 3	1,000,000	Btu/MMBtu
Conversion Factor 4	7,000	gr/lb
Gas at Standard Conditions	385.35	scf/lb-mol

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-18
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from Boiler 9

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Future Actual Emissions[a],[b]	
				lb/hr	tpy
Filterable PM	7.00E-04	lb/MMBtu	2014 stack test data	0.17	0.72
Total PM_{10}	5.50E-03	lb/MMBtu	2014 stack test data	1.30	5.69
Total $PM_{2.5}$	4.90E-03	lb/MMBtu	2014 stack test data	1.16	5.07
SO_2	1.00E-03	lb/MMBtu	CEM data and 2009 stack test	0.24	1.04
NO_X	4.26E-03	lb/MMBtu	2014 CEMS data - annual average of hourly data	1.01	4.41
VOC	2.97E-04	lb/MMBtu	2014 stack test data	0.07	0.31
CO	1.29E-03	lb/MMBtu	2014 CEMS data - annual average of hourly data	0.31	1.34
Pb	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.10E-04	4.80E-04
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.02	0.09
TRS[c]	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.02	0.09
CO_2	120,000	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	26,307.79	115,228.12
N_2O	2.2	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.48	2.11
CH_4	2.3	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.50	2.21
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	26,308.78	115,232.44
CO_2e[d]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	26,464.12	115,912.86

[a] Monroe proportionally added the fuel needed to accommodate the additional steam demand based on fuel usages in 2013 and 2014 to the maximum baseline fuel usage of Boilers 9 and 10, as shown below. Fuel additions were based on a total additional steam demand of 18,900 lbs/hr, 8,760 hours of operating per year, and an assumed heat input of 1,350 Btu to generate 1 lb of steam.

Baseline Years		Fuel Usage + Additional for Steam Demand (MMcf/yr)
2013	2014	1,920.47

[b] Projected future actual emissions were calculated assuming the following:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,078	MMBtu/MMscf

[c] Emission factor for TRS is assumed to be equal to the emission factor for H_2S.

[d] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR Part 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)

GWPi = global warming potential of greenhouse gas i from Table A-1 (below)

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-19
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from Boiler 10

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Future Actual Emissions[a],[b]	
				lb/hr	tpy
Filterable PM	4.00E-04	lb/MMBtu	2014 stack test data	0.09	0.40
Total PM_{10}	3.10E-03	lb/MMBtu	2014 stack test data	0.70	3.07
Total $PM_{2.5}$	3.00E-03	lb/MMBtu	2014 stack test data	0.68	2.97
SO_2	3.00E-03	lb/MMBtu	CEM data and 2009 stack test	0.68	2.97
NO_X	3.96E-03	lb/MMBtu	2014 CEMS data - annual average of hourly data	0.90	3.93
VOC	2.69E-04	lb/MMBtu	2014 stack test data	0.06	0.27
CO	4.97E-03	lb/MMBtu	2014 CEMS data - annual average of hourly data	1.13	4.93
Pb	5.00E-04	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	1.05E-04	4.60E-04
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.02	0.08
TRS[c]	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.02	0.08
CO_2	120,000	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	25,192.19	110,341.81
N_2O	2.2	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.46	2.02
CH_4	2.3	lb/MMSCF	AP-42 Chapter 1.4 Natural Gas Combustion Table 1.4-2	0.48	2.11
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	25,193.14	110,345.95
CO_2e[d]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	25,341.90	110,997.52

[a] Monroe proportionally added the fuel needed to accommodate the additional steam demand based on fuel usages in 2013 and 2014 to the maximum baseline fuel usage of Boilers 9 and 10, as shown below. Fuel additions were based on a total additional steam demand of 18,900 lbs/hr, 8,760 hours of operating per year, and an assumed heat input of 1,350 Btu to generate 1 lb of steam.

Baseline Years		Fuel Usage + Additional for Steam Demand (MMcf/yr)
2013	2014	1,839.03

[b] Projected future actual emissions were calculated assuming the following:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Conversion Factor 1	2,000	lb/ton
Fuel Gas Heating Value	1,078	MMBtu/MMscf

[c] Emission factor for TRS is assumed to be equal to the emission factor for H_2S.

[d] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR Part 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)

GWPi = global warming potential of greenhouse gas i from Table A-1 (below)

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-20
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the Claus SRU - Source ID 102[a]

Pollutant	Notes	Projected Actual Emissions[b]	
		lb/hr	tpy
Filterable PM	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.03	0.11
Total PM_{10}	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.10	0.44
Total $PM_{2.5}$	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.10	0.44
SO_2	Projected actual emissions are developed based on 2014 production and applying an increase of 2.4 long tons of sulfur per day for future production.	9.21	40.33
NO_X	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.33	5.83
VOC	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.07	0.32
CO	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.12	4.90
Lead	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	6.66E-06	2.92E-05
H_2S	Assumed to be converted to SO_2	0.00	0.00
TRS	No available emissions factor.	-	-
CO_2	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	6,738	29,513
N_2O	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.07	0.30
CH_4	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	20.34	89.09
Total GHG	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	6,759	29,603
CO_2e[b]	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	7,267	31,829

[a] A plan approval application that affects the SRU was submitted to PADEP on May 18, 2015. The expected emissions increase resulting from the modifications proposed in that application have not been incorporated into the project actual emissions for the SRU in this application. The expected emissions increases from the May 18, 2015 plan approval application have been accounted for in the contemporaneous emission increases analysis, shown in Table C-37.

[b] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
	24	hr/day
Maximum Sulfur Loading 2014	50.7	long tons sulfur/day
Future Sulfur Loading Increase	2.4	long tons sulfur/day
Maximum SO_2 Emission Factor 2014	4.16	lb SO2/long ton sulfur
Conversion Factor 1	2,000	lb/ton

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-21
Monroe Energy, LLC - Trainer, PA Refinery
Historical 2013-2014 Monthly Actual Emissions from the Claus SRU - Source ID 102

Date[a]	Filterable PM	Total PM_{10}	Total $PM_{2.5}$	SO_2	NO_X	VOC	CO	Lead	H_2S[b]	CO_2	CH_4	N_2O
	(tons)[c]											
Jan-13	7.09E-03	2.83E-02	2.83E-02	0.82	0.37	2.05E-02	0.31	1.86E-06	N/A	**4,581**	**13.83**	**0.05**
Feb-13	5.91E-03	2.36E-02	2.36E-02	1.20	0.31	1.71E-02	0.26	1.56E-06	N/A	**1,611**	**4.86**	**0.02**
Mar-13	5.99E-03	2.40E-02	2.40E-02	2.29	0.32	1.73E-02	0.26	1.58E-06	N/A	**1,186**	**3.58**	**0.01**
Apr-13	4.40E-03	1.76E-02	1.76E-02	1.34	0.23	1.27E-02	0.19	1.16E-06	N/A	1,606	4.85	0.02
May-13	4.42E-03	1.77E-02	1.77E-02	1.18	0.23	1.28E-02	0.20	1.16E-06	N/A	1,168	3.52	0.01
Jun-13	4.83E-03	1.93E-02	1.93E-02	1.16	0.25	1.40E-02	0.21	1.27E-06	N/A	2,089	6.31	0.02
Jul-13	5.19E-03	2.08E-02	2.08E-02	1.59	0.27	1.50E-02	0.23	1.37E-06	N/A	2,874	8.68	0.03
Aug-13	5.30E-03	2.12E-02	2.12E-02	1.49	0.28	1.53E-02	0.23	1.39E-06	N/A	1,740	5.25	0.02
Sep-13	4.76E-03	1.90E-02	1.90E-02	1.20	0.25	1.38E-02	0.21	1.25E-06	N/A	1,031	3.11	0.01
Oct-13	4.45E-03	1.78E-02	1.78E-02	1.39	0.23	1.29E-02	0.20	1.17E-06	N/A	2,308	6.97	0.02
Nov-13	4.76E-03	1.90E-02	1.90E-02	1.26	0.25	1.38E-02	0.21	1.25E-06	N/A	1,852	5.59	0.02
Dec-13	7.80E-03	1.33E-02	1.33E-02	1.46	0.41	2.26E-02	0.34	2.05E-06	N/A	1,024	3.09	0.01
Jan-14	**1.06E-02**	**4.23E-02**	**4.23E-02**	0.84	**0.56**	**3.06E-02**	**0.47**	**2.79E-06**	N/A	2,396	7.23	0.02
Feb-14	**7.87E-03**	**3.15E-02**	**3.15E-02**	0.73	**0.41**	**2.28E-02**	**0.35**	**2.07E-06**	N/A	1,893	5.71	0.02
Mar-14	**9.26E-03**	**3.71E-02**	**3.71E-02**	1.10	**0.49**	**2.68E-02**	**0.41**	**2.44E-06**	N/A	2,328	7.03	0.02
Apr-14	7.11E-03	2.84E-02	2.84E-02	1.53	0.37	2.06E-02	0.31	1.87E-06	N/A	1,152	3.48	0.01
May-14	7.32E-03	2.93E-02	2.93E-02	1.21	0.39	2.12E-02	0.32	1.93E-06	N/A	1,269	3.83	0.01
Jun-14	6.59E-03	2.63E-02	2.63E-02	1.70	0.35	1.91E-02	0.29	1.73E-06	N/A	870	2.62	0.01
Jul-14	7.83E-03	3.13E-02	3.13E-02	1.56	0.41	2.27E-02	0.35	2.06E-06	N/A	1,169	3.53	0.01
Aug-14	7.10E-03	2.84E-02	2.84E-02	2.03	0.37	2.06E-02	0.31	1.87E-06	N/A	995	3.00	0.01
Sep-14	7.24E-03	2.90E-02	2.90E-02	**2.15**	0.38	2.10E-02	0.32	1.91E-06	N/A	1,074	3.24	0.01
Oct-14	7.62E-03	3.05E-02	3.05E-02	**1.77**	0.40	2.21E-02	0.34	2.01E-06	N/A	1,231	3.71	0.01
Nov-14	8.55E-03	3.42E-02	3.42E-02	**2.33**	0.45	2.47E-02	0.38	2.25E-06	N/A	1,484	4.48	0.01
Dec-14	8.91E-03	3.67E-02	3.67E-02	1.94	0.47	2.68E-02	0.41	2.44E-06	N/A	1,009	3.05	0.01
Maximum Three (3) Month Average Actual Emissions	**9.24E-03**	**3.70E-02**	**3.70E-02**	**2.08**	**0.49**	**2.67E-02**	**0.41**	**2.43E-06**	**N/A**	**2,459**	**7.42**	**0.02**
Three (3) Month Period	**Jan-14**	**Jan-14**	**Jan-14**	**Sep-14**	**Jan-14**	**Jan-14**	**Jan-14**	**Jan-14**	**N/A**	**Jan-13**	**Jan-13**	**Jan-13**
	Mar-14	**Mar-14**	**Mar-14**	**Nov-14**	**Mar-14**	**Mar-14**	**Mar-14**	**Mar-14**	**N/A**	**Mar-13**	**Mar-13**	**Mar-13**

[a] The maximum three (3) month period of actual emissions are shown in bold for each pollutant.

[b] Assumed full conversion of H_2S to SO_2.

[c] Emissions shown here were calculated using the reported emissions and their associated calculation methods by the Trainery Refinery.

Table C-22
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from the Main Flare - Source ID 103

Pollutant	Notes	Projected Actual Emissions [a]	
		lb/hr	tpy
Filterable PM	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.29	1.25
Total PM_{10}	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.40	1.74
Total $PM_{2.5}$	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.40	1.74
SO_2	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.95	4.15
NO_X	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.72	3.15
VOC	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.48	6.48
CO	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	3.91	17.13
Lead	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	4.89E-05	2.14E-04
H_2S	No emission factors are available.	0.56	2.47
TRS	Assumed to be converted to SO_2	-	-
CO_2	No available emissions factor.	1347.65	5,903
N_2O	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.01	5.90E-02
CH_4	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	4.07	17.82
Total GHG	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1351.73	5,921
CO_2e[b]	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	1347.65	6,366

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Conversion Factor 1	2,000	lb/ton
Control Efficiency from Flare Gas Recovery System	80	%

[b] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)

GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-23
Monroe Energy, LLC - Trainer, PA Refinery
Historical 2013-2014 Monthly Actual Emissions from the Main Flare - Source ID 103

Date[a]	Filterable PM	Total PM_{10}	Total $PM_{2.5}$	SO_2	NO_x	VOC	CO	Lead	H_2S	CO_2	CH_4	N_2O
	(tons)[b]											
Jan-13	**0.97**	**1.35**	**1.35**	0.44	**2.43**	**5.01**	**13.23**	**3.41E-05**	0.36	**4,581**	**13.83**	**0.05**
Feb-13	**0.34**	**0.48**	**0.48**	1.53	**0.86**	**1.78**	**4.70**	**1.18E-05**	1.27	**1,611**	**4.86**	**0.02**
Mar-13	**0.25**	**0.34**	**0.34**	0.75	**0.64**	**1.32**	**3.49**	**7.63E-06**	0.18	**1,186**	**3.58**	**0.01**
Apr-13	0.35	0.45	0.45	0.72	0.89	1.83	4.84	8.38E-06	0.36	1,606	4.85	0.02
May-13	0.25	0.33	0.33	0.50	0.62	1.28	3.40	7.41E-06	0.33	1,168	3.52	0.01
Jun-13	0.46	0.55	0.55	**1.39**	1.15	2.37	6.26	8.41E-06	0.71	2,089	6.31	0.02
Jul-13	0.60	0.78	0.78	**2.28**	1.52	3.13	8.26	1.53E-05	0.98	2,874	8.68	0.03
Aug-13	0.38	0.48	0.48	**1.51**	0.94	1.95	5.14	8.78E-06	0.84	1,740	5.25	0.02
Sep-13	0.22	0.30	0.30	0.99	0.55	1.14	3.00	6.76E-06	**0.54**	1,031	3.11	0.01
Oct-13	0.49	0.62	0.62	1.82	1.23	2.53	6.68	1.13E-05	**1.30**	2,308	6.97	0.02
Nov-13	0.40	0.52	0.52	2.26	1.00	2.05	5.42	1.08E-05	**1.25**	1,852	5.59	0.02
Dec-13	0.21	0.26	0.26	0.28	0.53	1.10	2.90	3.95E-06	0.15	1,024	3.09	0.01
Jan-14	0.50	0.61	0.61	0.42	1.25	2.58	6.83	9.58E-06	0.24	2,396	7.23	0.02
Feb-14	0.40	0.50	0.50	0.49	1.02	2.10	5.55	8.06E-06	0.29	1,893	5.71	0.02
Mar-14	0.49	0.60	0.60	0.51	1.24	2.55	6.74	9.71E-06	0.30	2,328	7.03	0.02
Apr-14	0.25	0.32	0.32	0.78	0.64	1.32	3.48	5.60E-06	0.41	1,152	3.48	0.01
May-14	0.27	0.33	0.33	0.39	0.67	1.38	3.65	5.68E-06	0.21	1,269	3.83	0.01
Jun-14	0.18	0.23	0.23	0.56	0.46	0.95	2.51	3.99E-06	0.30	870	2.62	0.01
Jul-14	0.25	0.32	0.32	0.48	0.63	1.29	3.41	5.81E-06	0.29	1,169	3.53	0.01
Aug-14	0.21	0.27	0.27	0.85	0.52	1.08	2.84	5.66E-06	0.44	995	3.00	0.01
Sep-14	0.22	0.30	0.30	1.04	0.56	1.15	3.03	6.57E-06	0.55	1,074	3.24	0.01
Oct-14	0.26	0.34	0.34	0.88	0.66	1.36	3.59	6.99E-06	0.48	1,231	3.71	0.01
Nov-14	0.32	0.40	0.40	0.47	0.81	1.66	4.39	6.84E-06	0.25	1,484	4.48	0.01
Dec-14	0.21	0.27	0.27	0.60	0.53	1.09	2.89	4.90E-06	0.32	1,009	3.05	0.01
Maximum Three (3) Month Average Actual Emissions	**0.52**	**0.72**	**0.72**	**1.73**	**1.31**	**2.70**	**7.14**	**1.78E-05**	**1.03**	**2,459**	**7.42**	**0.02**
Three (3) Month Period	**Jan-13 Mar-13**	**Jan-13 Mar-13**	**Jan-13 Mar-13**	**Jun-13 Aug-13**	**Jan-13 Mar-13**	**Jan-13 Mar-13**	**Jan-13 Mar-13**	**Jan-13 Mar-13**	**Sep-13 Nov-13**	**Jan-13 Mar-13**	**Jan-13 Mar-13**	**Jan-13 Mar-13**

[a] The maximum three (3) month period of actual emissions are shown in bold for each pollutant.

[b] Emissions shown here were calculated using the reported emissions and their associated calculation methods by the Trainery Refinery.

Table C-24
Monroe Energy, LLC - Trainer, PA Refinery
Projected Actual Emissions from Storage Tanks

PADEP ID	Unit	Notes	Projected Actual VOC Emissions [a][b]	
			lb/hr	tpy
165	Tank 93	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.44	1.92
166	Tank 94	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.63	2.76
126	Tank 95	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.79	3.46
127	Tank 96	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.02	4.45
137	Tank 152	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.15	5.06
138	Tank 153	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.04	0.19
140	Tank 155	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.04	0.18
142	Tank 157	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.05	0.21
300	Tank 158 (Source ID 193)	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	3.00	13.15
143	Tank 159	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.91	3.97
194	Tank 160	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.05	0.22
144	Tank 161	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.38	6.04
145	Tank 162	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.74	3.25
146	Tank 163	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.97	4.25
147	Tank 164	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.87	3.79
148	Tank 165	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.89	8.26
149	Tank 166	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.81	3.55
150	Tank 168	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.66	2.89
152	Tank 170	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.40	6.13
155	Tank 174	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	2.74	12.01
156	Tank 175	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.70	7.43
157	Tank 178	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	0.74	3.23
160	Tank 181	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	2.00	8.75
161	Tank 182	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	4.69	20.53
163	Tank 185	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	2.57	11.26
164	Tank 186	Projected actual emissions are developed by annualizing the average of the three (3) highest emitting months from 2013-2014.	1.25	5.47

[a] Projected future actual emissions are based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Conversion Factor 1	2,000	lb/ton

[b] Monthly emissions were calculated using the methodology laid out in U.S. EPA's *Compilation of Air Pollutant Emission Factors* - AP-42, Chapter 7.

Table C-25
Monroe Energy, LLC - Trainer, PA Refinery
Historical 2013-2014 Monthly Actual VOC Emissions from Storage Tanks

Date[a]	Tank 93	Tank 94	Tank 95	Tank 96	Tank 152	Tank 153	Tank 155	Tank 157	Tank 158 (Source ID 193)	Tank 159	Tank 160	Tank 161	Tank 162	Tank 163	Tank 164	Tank 165	Tank 166	Tank 168	Tank 170	Tank 174	Tank 175	Tank 178	Tank 181	Tank 182	Tank 185	Tank 186
	(tons)[b]																									
Jan-13	0.12	0.18	0.20	0.33	**0.19**	0.01	0.00	0.01	0.06	0.31	0.02	0.46	0.11	0.13	0.15	0.14	0.13	**0.28**	0.47	0.44	0.67	0.10	0.13	0.40	0.64	0.37
Feb-13	0.12	0.14	0.21	0.36	**0.72**	0.02	0.01	0.01	0.04	0.32	0.01	0.49	0.09	0.09	0.09	0.07	0.11	**0.28**	**0.50**	0.47	0.39	0.06	0.13	0.27	0.39	0.18
Mar-13	0.14	**0.24**	0.26	0.38	**0.35**	0.01	0.01	0.01	0.06	0.34	0.02	0.52	0.11	0.11	0.17	0.14	0.09	**0.16**	**0.52**	0.54	0.50	0.11	0.09	0.49	0.76	0.46
Apr-13	0.14	**0.21**	0.29	0.36	0.02	0.01	0.00	0.01	0.10	0.33	0.01	0.50	0.11	0.16	0.11	0.20	0.12	0.14	**0.52**	0.42	0.43	0.13	0.13	0.22	0.40	0.21
May-13	0.16	**0.23**	0.28	0.31	0.01	0.01	0.01	0.01	0.21	0.30	0.02	0.44	0.09	0.18	0.14	0.00	0.10	0.18	0.45	0.42	0.63	0.10	0.11	0.32	0.39	0.37
Jun-13	0.13	0.22	0.29	0.28	0.02	0.01	0.00	0.02	0.17	0.29	0.02	0.41	0.11	0.19	0.13	0.60	0.13	0.28	0.43	0.32	0.58	0.09	0.54	0.33	0.37	0.21
Jul-13	0.15	0.21	0.30	0.26	0.01	0.01	0.01	0.00	0.21	0.28	0.02	0.38	0.08	0.20	0.14	0.13	0.12	0.01	0.41	0.35	0.33	0.09	0.00	0.32	0.33	0.21
Aug-13	0.13	0.22	0.27	0.25	0.01	0.01	0.01	0.00	0.14	0.27	0.02	0.37	0.09	0.13	0.12	0.13	0.10	0.02	0.40	0.39	0.32	0.10	0.00	0.43	0.34	0.23
Sep-13	0.12	0.20	0.27	0.26	0.01	0.01	0.01	0.01	0.10	0.27	0.02	0.38	0.09	0.20	0.13	0.15	0.18	0.01	0.39	0.22	0.38	0.10	0.00	0.40	0.27	0.18
Oct-13	0.14	0.20	0.25	0.28	0.01	0.01	0.00	0.01	0.10	0.28	0.01	0.40	0.08	0.11	0.11	0.12	0.12	0.01	0.44	0.33	0.54	0.29	0.98	0.29	0.34	0.19
Nov-13	0.14	0.18	0.23	0.31	0.01	0.01	0.00	0.01	0.05	0.29	0.01	0.43	0.07	0.10	0.08	0.09	0.08	0.00	0.46	0.30	0.39	0.07	0.25	0.91	0.39	0.20
Dec-13	0.12	0.24	0.20	0.32	0.01	0.00	0.01	0.02	0.01	0.30	0.01	0.45	0.08	0.10	0.10	0.10	0.06	0.02	0.46	0.18	0.38	**0.27**	0.10	0.26	0.29	0.27
Jan-14	0.13	0.14	0.20	0.33	0.01	0.00	0.00	0.01	0.76	0.30	0.01	0.46	0.09	0.05	0.07	0.07	0.05	0.01	0.18	0.19	0.13	**0.05**	0.06	0.54	0.29	0.21
Feb-14	0.14	0.16	0.20	**0.36**	0.01	0.01	0.00	0.01	0.77	**0.33**	0.01	**0.49**	**0.53**	0.08	**0.65**	**1.69**	0.11	0.01	0.16	1.05	0.66	**0.49**	**1.85**	**3.29**	0.32	0.23
Mar-14	0.13	0.19	0.24	**0.38**	0.02	0.01	0.01	**0.02**	0.80	**0.34**	0.01	**0.52**	**0.14**	0.10	**0.20**	**0.26**	0.08	0.01	0.19	0.65	0.22	0.06	**0.10**	**0.76**	0.77	0.26
Apr-14	**0.16**	0.21	**0.29**	**0.37**	0.01	0.01	0.02	**0.02**	0.81	**0.33**	0.02	**0.50**	**0.15**	0.11	**0.10**	**0.11**	0.09	0.02	0.27	0.34	0.25	0.13	**0.23**	**1.09**	0.43	0.25
May-14	**0.15**	0.16	**0.28**	0.31	0.02	0.02	0.01	**0.02**	**1.43**	0.30	0.02	0.41	0.15	0.10	0.12	0.13	0.12	0.01	0.45	0.30	0.28	0.17	0.23	1.00	0.40	0.21
Jun-14	**0.17**	0.18	**0.30**	0.28	0.02	0.01	0.01	0.01	**1.04**	0.29	0.02	0.42	0.03	0.15	0.17	0.37	0.24	0.02	0.46	**0.76**	**0.66**	0.16	0.25	1.13	**0.98**	0.21
Jul-14	0.14	0.13	0.28	0.26	0.02	0.01	0.00	0.01	**0.82**	0.27	0.02	0.44	0.12	**0.37**	0.18	0.34	**0.24**	0.01	0.51	**1.15**	**0.63**	0.25	0.27	1.11	**0.90**	0.37
Aug-14	0.11	0.17	0.27	0.25	0.01	0.01	**0.01**	0.02	0.81	0.27	0.01	0.42	0.18	**0.35**	0.16	0.30	**0.34**	0.02	0.36	**1.10**	**0.56**	0.20	0.25	1.12	**0.93**	0.34
Sep-14	0.11	0.14	0.26	0.26	0.02	0.01	**0.02**	0.02	0.80	0.27	0.02	0.40	0.18	**0.34**	0.22	0.27	**0.31**	0.02	0.42	0.31	0.52	0.20	0.22	0.95	0.86	**0.55**
Oct-14	0.09	0.13	0.25	0.27	0.02	**0.01**	**0.01**	0.02	0.79	0.28	**0.02**	0.35	0.15	0.13	0.19	0.27	0.20	0.01	0.27	0.86	0.49	0.10	0.20	0.92	0.81	**0.38**
Nov-14	0.10	0.14	0.23	0.30	0.02	**0.02**	0.01	0.02	0.77	0.29	**0.02**	0.27	0.15	0.21	0.29	0.27	0.17	0.02	0.32	0.49	0.41	0.10	0.12	0.59	0.61	**0.44**
Dec-14	0.08	0.10	0.18	0.32	0.02	**0.02**	0.01	0.01	0.01	0.30	**0.02**	0.22	0.13	0.23	0.22	0.29	0.16	0.01	0.33	0.50	0.40	0.10	0.13	0.59	0.59	0.44
Maximum Three (3) Month Average Actual Emissions	**0.16**	**0.23**	**0.29**	**0.37**	**0.42**	**0.02**	**0.01**	**0.02**	**1.10**	**0.33**	**0.02**	**0.50**	**0.27**	**0.35**	**0.32**	**0.69**	**0.30**	**0.24**	**0.51**	**1.00**	**0.62**	**0.27**	**0.73**	**1.71**	**0.94**	**0.46**
Three (3) Month Period	**Apr-14**	**Mar-13**	**Apr-14**	**Feb-14**	**Jan-13**	**Oct-14**	**Aug-14**	**Mar-14**	**May-14**	**Feb-14**	**Oct-14**	**Feb-14**	**Feb-14**	**Jul-14**	**Feb-14**	**Feb-14**	**Jul-14**	**Jan-13**	**Feb-13**	**Jun-14**	**Jun-14**	**Dec-13**	**Feb-14**	**Feb-14**	**Jun-14**	**Sep-14**
	Jun-14	**May-13**	**Jun-14**	**Apr-14**	**Mar-13**	**Dec-14**	**Oct-14**	**May-14**	**Jul-14**	**Apr-14**	**Dec-14**	**Apr-14**	**Apr-14**	**Sep-14**	**Apr-14**	**Apr-14**	**Sep-14**	**Mar-13**	**Apr-13**	**Aug-14**	**Aug-14**	**Feb-14**	**Apr-14**	**Apr-14**	**Aug-14**	**Nov-14**

[a] The maximum three (3) month period of actual emissions are shown in bold for each tank.

[b] Emissions shown here were calculated using the reported emissions and their associated calculation methods by the Trainery Refinery.

Table C-26
Monroe Energy, LLC - Trainer, PA Refinery
Potential to Emit from the New Feed Heaters

Pollutant	Emission Factor	Emission Factor Units	Notes	Projected Actual Emissions [a]	
				lb/hr	tpy
Filterable PM	5.00E-03	lb/MMBtu	Vendor gauranteed emissions.	0.72	3.15
Total PM_{10}	5.00E-03	lb/MMBtu	Vendor gauranteed emissions.	0.72	3.15
Total $PM_{2.5}$	5.00E-03	lb/MMBtu	Vendor gauranteed emissions.	0.72	3.15
SO_2	162	ppmdv	Emission factor based on the short-term allowable RFG H_2S concentration found at 40 CFR §§60.102a(g)(1)(ii). Assumed full conversion from H_2S to SO_2.	3.27	4.42
	50	ppmdv	Based upon TVOP No. 23-00003 limit for H_2S from refinery fuel gas fired from the north side fuel supply. Assumed full conversion of H_2S to SO_2.		
NO_X	0.035	lb/MMBtu	Vendor gauranteed emissions.	5.03	22.04
VOC	5.00E-03	lb/MMBtu	Vendor gauranteed emissions.	0.72	3.15
CO[b]	400	ppmdv @ 3% O_2	Vendor gauranteed emissions.	31.19	17.08
Lead	5.00E-04	lb/MMSCF	AP-42 Table 1.4-2	6.08E-05	2.66E-04
H_2S	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.01	0.05
TRS	8.50E-05	lb/MMBtu	U.S. EPA's memo titled "Emission Estimation Protocol for Petroleum Refineries" from May 2011, Table 4-3.	0.01	0.05
CO_2	59.00	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-1	18,704	81,925
N_2O	6.00E-04	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	1.90E-01	0.83
CH_4	3.00E-03	kg/MMBtu	40 CFR Part 98 Subpart C, Table C-2	9.51E-01	4.17
Total GHG	N/A	N/A	Emissions are calculated as the sum of CO_2, N_2O, and CH_4.	18,706	81,930
CO_2e[c]	N/A	N/A	Emissions are calculated according to 40 CFR Part 98 Equation A-1.	18,785	82,278

[a] The potential to emit is based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Total Heat Input (both heaters)	143.8	MMBtu/hr
Fuel Gas Heating Value	1,182	MMBtu/MMSCF
Conversion Factor 1	2,000	lb/ton
Molecular Weight CO	28.01	lb/lb-mol
Molecular Weight SO_2	64.00	lb/lb-mol
Natural Gas F-factor	8,710	dscf/MMBtu
Conversion Factor 2	60	min/hour
Conversion Factor 3	1,000,000	Btu/MMBtu
Standard Oxygen	20.9	%
Gas at Standard Conditions	385.35	scf/lb-mol
Conversion Factor 4	2.20	lb/kg

[b] Potential annual CO emissions have been calculated to be reflective of future CO emissions anticipated during future normal operations (i.e., an annual average CO concentration of 50 ppmdv @ 3% O_2).

[c] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-27
Monroe Energy, LLC - Trainer, PA Refinery
Cooling Tower Calculated Potential to Emit PM/PM_{10}/$PM_{2.5}$ Emission Rates

Pollutant	Air Flow Rate (design)[b]	Cooling Water Recirculation Flow Rate	Circulating Water TDS[c]	Drift Rate[d] (design)	Cooling Water Tower Particulate Emission (drift) Rate	Cooling Water Tower Particulate Emission (drift) Rate	Cooling Water Tower Particulate Emission (drift) Rate	Particulate Emissions from Proposed Cooling Towers[e]	
	(scfm)	(gpm)	(ppmw)	(%)	(lb/hr)	(tons/yr)	(gr/dscf)	lb/hr	(tpy)[f]
PM/PM_{10}/$PM_{2.5}$	1,568,000	10,200	1,400	0.0005%	0.04	0.16	2.66E-06	0.04	0.16

[a] PM is conservatively assumed to be equal to PM2.5 and PM10.

[b] Air flow rate is based on vendor provided specifications.

[c] TDS of city water ranges from 175-280 ppmw. Monroe has assumed five (5) cycles of maximum concentration (280 ppmw × 5 cycles = 1,400 ppmw).

[d] Drift rate is BAT.

[e] Emission estimation method from U.S. EPA AP-42 Chapter 13.4.

[f] Annual emissions for the proposed cooling towers are based on 8,760 hours per year of operation.

[g] The potential to emit is based upon the following parameters:

Parameter	Value	Units/Notes
Operating Hours	8,760	hr/yr
Conversion Factor 1	2,000	lb/ton
Conversion Factor 2	1,000	lb/M lb
Conversion Factor 3	1.10E-03	tons/kg
Conversion Factor 4	453.59	g/lb
Conversion Factor 5	3.78	L/gal
Conversion Factor 6	2.21E-06	lb/mg
Conversion Factor 7	60.00	min/hr
Conversion Factor 8	7,000	gr/lb

Table C-28
Monroe Energy, LLC - Trainer, PA Refinery
Cooling Tower Calculated Potential to Emit VOC Emission Rates

Concentration of Total Hydrocarbons (THCs) In Stripped Air[a]	Pressure	Stripping Chamber Temperature	Concentration of Air Strippable Compound [b]	Mass Flow Rate of the Cooling Water	Potential VOC Emissions from Proposed Cooling Towers[c]	
(ppmw)	(Hg)	(°C)	(ppmw)	(gal/min)	(lb/hr)	(tpy)
21.00	29.92	32	0.27	10,200	1.37	6.02

[a] Concentration of total hydrocarbons (THCs) is one-third the maximum VOC concentration of stripped air allowed before a leaking heat exchanger must be repaired under the heater exchanger system provisions found at 40 CFR §63.654.

[b] Concentration of air strippable compound was calculated based on Equation 7-1 from Texas Commission Environmental Quality guidance titled: "Air Stripping Method (Modified El Paso Method) for Determination of Volatile Organic Compound Emissions from Water Sources, *Sampling Procedures Manual* , Appendix P: Cooling Tower Monitoring Guidance."

$$C = (M*(P*0.03342\ atm/(in\ Hg))*b*c)/(R*(T+273)*a)$$

where:

C = Concentration of air strippable compound in water matrix (ppmw)
M = Molecular weight of the compound (g/mol)
P = Pressure in the stripping chamber (in Hg); equivalent to standard atmospheric pressure
b = Stripping air flow rate (ml/min)
c = Concentration of compound in the stripped air (ppmv)
R = 82.054 ml-atm/mol-K
T = Stripping chamber temperature (Celsius)
a = Sample water flow rate (ml/min)

The constants used in Equation 7-1 are as follows:

Parameter from Equation 7-1	Value	Unit
M	16.04	g/mol
b	2500	ml/min
R	82.054	ml-atm/mol-K
a	125	ml/min

[c] Concentration of air strippable compound was calculated based on Equation 7-2 from Texas Commission Environmental Quality guidance titled: "Air Stripping Method (Modified El Paso Method) for Determination of Volatile Organic Compound Emissions from Water Sources, *Sampling Procedures Manual* , Appendix P: Cooling Tower Monitoring Guidance."

$$E=C*F*60\ min/hr*8.337\ lb/gal*\ 1/([\![10]\!]\hat{}6\ p\ pm)$$

where:

E = Mass emission rate of VOCs (lb/hr)
C = Concentration of air strippable compound in the water matrix (ppmw)
F = Water circulation rate of source (gallons/min)

The constants used in Equation 7-2 are as follows:

Parameter	Value	Unit
Operating Hours	8,760	hr/yr
Conversion Factor 1	60	min/hr
Conversion Factor 2	8.34	lb water/gal water
Conversion Factor 3	1,000,000	ppm
Conversion Factor 4	2,000	lb/ton

Table C-29
Monroe Energy, LLC - Trainer, PA Refinery
New Fugitive Components

Fugitive Equipment Component Counts (total for each)				
Component	**Total**	**Light Liquid**	**Heavy Liquid**	**Gas Service**
Valves	1,773	656	60	1,057
Control Valves	33	33	0	0
Check Valves	42	42	0	0
Pressure Relief Valves	28	28	0	0
Strainers	6	6	0	0
Flanges	976	282	30	664
Compressors	1	0	0	1
Pumps	8	8	0	0
Connections	62	62	0	0

Note : Component counts estimated from P&ID drawings.

Table C-30
Monroe Energy, LLC - Trainer, PA Facility
New Fugitive Potential to Emit Rates

Component	VOC Leak Rate[a]					
	Default 0 ppm (lbs/year)	0-500 ppm (lbs/year)	500 -10,000 ppm (lbs/year)	>10,000 ppm (lbs/year)	Total VOC (lbs/hr)[b]	Total VOC (tpy)
Valves	240.37	646.99	1,398.14	3,287.11	0.64	2.79
Control Valves	4.47	12.04	26.02	61.18	0.01	0.05
Check Valves	5.69	15.33	33.12	77.87	0.02	0.07
Pressure Relief Valves	3.80	10.22	22.08	51.91	0.01	0.04
Strainers	0.42	4.90	6.62	12.69	0.00	0.01
Flanges	5.26	548.85	1,042.69	2,403.22	0.46	2.00
Compressors	0.07	0.82	1.10	2.11	0.00	0.00
Pumps	3.34	27.54	39.60	17.15	0.01	0.04
Connections	4.31	50.65	68.38	131.11	0.03	0.13
Total	267.73	1,317.33	2,637.75	6,044.35	**1.17**	**5.13**

[a] Source: "Protocol for Equipment Leak Emission Estimates", EPA-453/R-95-017

[b] Short-term emissions rates are determined assuming 8,760 hours of operation per year.

Table C-31
Monroe Energy, LLC - Trainer, PA Facility
Projected Future Actual Emissions

Emission Unit		Emission Rate (tpy)										
		PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	VOC	CO	Lead	H_2S	TRS	CO_2e[(a)]
101	FCC Unit	84.62	110.60	96.21	88.82	432.52	3.20	16.35	-	-	-	756,643.87
733	FCCU Feed Heater	0.18	0.72	0.72	0.78	3.02	0.52	7.93	4.72E-05	8.56E-03	8.56E-03	13,159.88
735	Kerosene/HCN HTU Feed Heater	0.06	0.25	0.25	0.28	4.51	0.18	2.81	1.67E-05	3.09E-03	3.09E-03	4,749.00
736	Diesel HTU Heater	0.11	0.62	0.62	0.67	13.84	0.39	0.18	4.05E-05	7.45E-03	7.45E-03	11,443.37
741	D2/VGO Hydrotreater Feed Heater	0.15	0.59	0.59	0.61	7.71	0.42	6.48	3.86E-05	6.70E-03	6.70E-03	10,299.04
737	Naphtha HDS Heater	0.61	2.43	2.43	2.55	33.29	1.76	26.88	1.60E-04	0.03	0.03	43,484.82
738	Platformer Feed Heater	4.06	16.23	16.23	17.03	185.70	11.75	0.15	1.07E-03	0.18	0.18	282,079.15
739	Isocracker 1st Stage Heater	0.26	1.03	1.03	1.08	16.77	0.75	11.43	6.80E-05	0.01	0.01	18,881.57
740	Isocracker Splitter Reboiler	0.34	1.37	1.37	1.44	18.05	0.99	15.17	9.03E-05	0.02	0.02	25,175.42
742	VCD 541 VAC Heater	0.27	1.06	1.06	1.16	20.50	0.77	11.76	7.00E-05	0.01	0.01	20,598.07
743	VCD 542 VAC Heater	0.15	0.62	0.62	0.67	6.75	0.03	0.02	4.06E-05	7.45E-03	7.45E-03	11,443.37
746	VCD 544 VAC Heater	0.55	2.19	2.19	2.39	12.44	2.18	5.29	1.44E-04	0.03	0.03	40,623.97
744	ACD 543 Crude Heater	2.01	8.02	8.02	8.77	45.55	5.81	88.66	5.28E-04	0.10	0.10	148,763.85
745	ACD 544 Crude Heater	2.00	8.01	8.01	8.75	50.11	5.80	88.55	5.27E-04	0.10	0.10	148,763.85
34	Boiler 9	0.72	5.69	5.07	1.04	4.41	0.31	1.34	4.80E-04	0.09	0.09	115,912.86
35	Boiler 10	0.40	3.07	2.97	2.97	3.93	0.27	4.93	4.60E-04	0.08	0.08	110,997.52
102	SRU	0.11	0.44	0.44	40.33	5.83	0.32	4.90	2.92E-05	0.00	-	31,828.54
103	Main Flare	1.25	1.74	1.74	4.15	3.15	6.48	17.13	2.14E-04	2.47	-	6,365.71
165	Tank 93	-	-	-	-	-	1.92	-	-	-	-	-
166	Tank 94	-	-	-	-	-	2.76	-	-	-	-	-
126	Tank 95	-	-	-	-	-	3.46	-	-	-	-	-
127	Tank 96	-	-	-	-	-	4.45	-	-	-	-	-
137	Tank 152	-	-	-	-	-	5.06	-	-	-	-	-
138	Tank 153	-	-	-	-	-	0.19	-	-	-	-	-
140	Tank 155	-	-	-	-	-	0.18	-	-	-	-	-
142	Tank 157	-	-	-	-	-	0.21	-	-	-	-	-
300	Tank 158 (Source ID 193)	-	-	-	-	-	13.15	-	-	-	-	-
143	Tank 159	-	-	-	-	-	3.97	-	-	-	-	-
194	Tank 160	-	-	-	-	-	0.22	-	-	-	-	-
144	Tank 161	-	-	-	-	-	6.04	-	-	-	-	-
145	Tank 162	-	-	-	-	-	3.25	-	-	-	-	-
146	Tank 163	-	-	-	-	-	4.25	-	-	-	-	-
147	Tank 164	-	-	-	-	-	3.79	-	-	-	-	-
148	Tank 165	-	-	-	-	-	8.26	-	-	-	-	-
149	Tank 166	-	-	-	-	-	3.55	-	-	-	-	-
150	Tank 168	-	-	-	-	-	2.89	-	-	-	-	-
152	Tank 170	-	-	-	-	-	6.13	-	-	-	-	-
155	Tank 174	-	-	-	-	-	12.01	-	-	-	-	-
156	Tank 175	-	-	-	-	-	7.43	-	-	-	-	-
157	Tank 178	-	-	-	-	-	3.23	-	-	-	-	-
160	Tank 181	-	-	-	-	-	8.75	-	-	-	-	-
161	Tank 182	-	-	-	-	-	20.53	-	-	-	-	-
163	Tank 185	-	-	-	-	-	11.26	-	-	-	-	-
164	Tank 186	-	-	-	-	-	5.47	-	-	-	-	-
N/A	New Feed Heaters	3.15	3.15	3.15	4.42	22.04	3.15	17.08	2.66E-04	-	-	-
N/A	New Cooling Tower	0.16	0.16	0.16	-	-	6.02	-	-	-	-	-
N/A	Additional Fugitive Emissions	-	-	-	-	-	5.13	-	-	-	-	-
Total Projected Future Actual Emissions		***16.53***	***57.40***	***56.68***	***99.11***	***457.60***	***195.44***	***310.66***	***4.29E-03***	***3.15***	***0.68***	***1,044,569.99***

[(a)] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

Table C-32
Monroe Energy, LLC - Trainer, PA Refinery
Emissions Which Could Have Been Accomodated (CHA)

Emission Unit			Emission Rate (tpy)												
			PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	VOC	CO	Lead	H_2S	TRS	CO_2	N_2O	CH_4
101	FCC Unit	Highest Emitting Month	Mar-15	Mar-15	Mar-15	Jun-15	Dec-14	Mar-13	May-13	Jan-14	-	-	Jul-10	Jul-10	Jul-10
		Monthly Emissions	9.79	11.73	10.07	8.06	37.87	0.27	2.95	3.48E-05	0.00	0.00	46,689.55	0.27	1.37
		Annualized Emissions (CHA)	93.30	140.78	120.81	96.67	454.41	3.26	35.45	4.18E-04	0.00	0.00	560,274.64	3.28	16.46
733	FCCU Feed Heater	Highest Emitting Month	Jun-14	Jun-14	Jun-14	Jun-14	Jun-14	Jun-14	Mar-13	Jun-14	Jul-09	Jul-09	Jul-09	Jul-09	Jul-09
		Monthly Emissions	0.03	0.13	0.13	0.14	0.54	0.09	0.94	8.32E-06	1.85E-03	1.85E-03	2,833.44	0.03	0.14
		Annualized Emissions (CHA)	0.38	1.52	1.52	1.66	6.44	1.10	11.29	9.99E-05	0.02	0.02	34,001.33	0.35	1.73
735	Kerosene/HCN HTU Feed Heater	Highest Emitting Month	Dec-14	Jul-15	Jul-15	Jul-15	May-15	Jul-15	Dec-14	Aug-14	Jan-09	Jan-11	Jan-11	Jan-11	Jan-11
		Monthly Emissions	0.04	0.04	0.04	0.05	0.77	0.03	0.44	2.38E-06	3.12E-04	3.63E-04	555.94	5.65E-03	0.03
		Annualized Emissions (CHA)	0.47	0.50	0.50	0.55	9.20	0.36	5.23	2.85E-05	3.74E-03	4.36E-03	6,671.34	0.07	0.34
736	Diesel HTU Heater	Highest Emitting Month	Apr-14	Jul-15	Jul-15	Jul-15	Jul-15	Oct-13	Jan-13	Jan-13	Mar-10	Mar-10	Mar-10	Mar-10	Mar-10
		Monthly Emissions	0.05	0.06	0.06	0.07	1.37	0.03	0.91	5.39E-06	1.00E-03	1.00E-03	1,529.58	0.02	0.08
		Annualized Emissions (CHA)	0.63	0.68	0.68	0.81	16.45	0.39	10.87	6.47E-05	0.01	0.01	18,354.99	0.19	0.93
741	D2/VGO Hydrotreater Feed Heater	Highest Emitting Month	Jul-14	Jun-15	Jun-15	Jun-15	Jun-15	Jun-15	May-13	May-13	Jan-09	Mar-11	May-11	May-11	May-11
		Monthly Emissions	0.07	0.10	0.10	0.10	1.26	0.07	1.28	7.64E-06	1.46E-03	1.85E-03	2,879.96	0.03	0.15
		Annualized Emissions (CHA)	0.79	1.14	1.14	1.20	15.06	0.83	15.41	9.17E-05	0.02	0.02	34,559.53	0.35	1.76
737	Naphtha HDS Heater	Highest Emitting Month	Oct-14	Oct-14	Oct-14	Oct-14	Oct-14	Oct-14	Oct-14	Oct-14	Oct-10	Oct-10	Oct-10	Oct-10	Oct-10
		Monthly Emissions	0.20	0.20	0.20	0.21	3.09	0.14	2.19	1.30E-05	2.43E-03	2.43E-03	3,714.73	0.04	0.19
		Annualized Emissions (CHA)	2.37	2.37	2.37	2.49	37.04	1.72	26.25	1.56E-04	0.03	0.03	44,576.75	0.45	2.27
738	Platformer Feed Heater	Highest Emitting Month	Mar-14	Jul-15	Jul-15	Jul-15	Jul-15	Jul-15	Mar-13	Mar-13	Mar-10	Mar-10	Mar-10	Mar-10	Mar-10
		Monthly Emissions	1.26	1.29	1.29	1.35	14.51	0.93	0.59	9.20E-05	0.02	0.02	26,617.95	0.27	1.35
		Annualized Emissions (CHA)	15.12	15.46	15.46	16.21	174.17	11.19	7.11	1.10E-03	0.21	0.21	319,415.38	3.25	16.24
739	Isocracker 1st Stage Heater	Highest Emitting Month	Dec-14	Aug-13	Aug-13	Aug-13	Jan-15	Aug-13	May-13	May-13	Jan-10	Jan-10	Jan-10	Jan-10	Jan-10
		Monthly Emissions	0.09	0.12	0.12	0.12	1.81	0.08	1.37	8.13E-06	1.27E-03	1.27E-03	1,937.43	0.02	0.10
		Annualized Emissions (CHA)	1.07	1.39	1.39	1.46	21.75	1.01	16.45	9.76E-05	0.02	0.02	23,249.17	0.24	1.18
740	Isocracker Splitter Reboiler	Highest Emitting Month	May-14	May-14	May-14	May-14	May-14	May-14	Jul-13	Jul-13	May-10	Mar-11	Mar-11	Mar-11	Mar-11
		Monthly Emissions	0.13	0.13	0.13	0.13	1.65	0.09	1.46	8.72E-06	1.26E-03	1.30E-03	1,986.38	0.02	0.10
		Annualized Emissions (CHA)	1.50	1.50	1.50	1.58	19.76	1.09	17.58	1.05E-04	0.02	0.02	23,836.53	0.24	1.21
742	VCD 541 VAC Heater	Highest Emitting Month	Jul-15	Jul-15	Jul-15	Jul-15	Apr-15	Jul-15	Aug-14	Aug-14	Jan-09	Apr-10	Apr-10	Apr-10	Apr-10
		Monthly Emissions	0.02	0.10	0.10	0.11	1.82	0.07	0.95	5.63E-06	1.03E-03	9.72E-04	1,487.03	0.02	0.08
		Annualized Emissions (CHA)	0.29	1.17	1.17	1.28	21.87	0.85	11.34	6.75E-05	0.01	0.01	17,844.39	0.18	0.91
743	VCD 542 VAC Heater	Highest Emitting Month	Apr-14	Apr-14	Apr-14	Apr-14	Apr-14	Apr-14	Apr-14	Apr-14	Jan-09	Jul-10	Jul-10	Jul-10	Jul-10
		Monthly Emissions	0.11	0.11	0.11	0.06	0.63	2.57E-03	1.95E-03	3.83E-06	1.20E-03	1.12E-03	1,719.25	0.02	0.09
		Annualized Emissions (CHA)	1.32	1.32	1.32	0.76	7.52	0.03	0.02	4.60E-05	0.01	0.01	20,631.05	0.21	1.05
746	VCD 544 VAC Heater	Highest Emitting Month	Mar-14	Aug-13	Aug-13	Aug-13	Aug-13	Aug-13	Jan-13	Aug-13	Jan-10	Jan-10	Jan-10	Jan-10	Jan-10
		Monthly Emissions	0.27	0.28	0.28	0.24	1.22	0.21	0.45	1.45E-05	2.50E-03	2.50E-03	3,819.02	0.04	0.19
		Annualized Emissions (CHA)	3.20	3.36	3.36	2.88	14.63	2.56	5.41	1.74E-04	0.03	0.03	45,828.20	0.47	2.33
744	ACD 543 Crude Heater	Highest Emitting Month	Apr-14	Sep-13	Sep-13	Sep-13	Oct-13	Sep-13	Sep-13	Sep-13	Mar-10	Mar-10	May-11	May-11	May-11
		Monthly Emissions	0.72	0.73	0.73	0.80	4.14	0.53	8.07	4.80E-05	8.80E-03	8.80E-03	13,850.21	0.14	0.70
		Annualized Emissions (CHA)	8.66	8.76	8.76	9.57	49.71	6.34	96.84	5.76E-04	0.11	0.11	166,202.49	1.69	8.45
745	ACD 544 Crude Heater	Highest Emitting Month	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	Jan-14	Mar-10	Mar-10	Mar-10	Mar-10	Mar-10
		Monthly Emissions	0.77	0.77	0.77	0.84	4.68	0.56	8.50	5.06E-05	8.58E-03	8.58E-03	13,123.53	0.13	0.67
		Annualized Emissions (CHA)	9.23	9.23	9.23	10.08	56.20	6.68	102.01	6.07E-04	0.10	0.10	157,482.30	1.60	8.01
34	Boiler 9	Highest Emitting Month	Jan-15	Jan-15	Jan-15	Jun-15	Dec-13	Jan-15	Jan-14	Mar-13	-	-	Aug-10	Aug-10	Aug-10
		Monthly Emissions	0.07	0.47	0.44	0.27	0.41	0.03	0.12	4.66E-05	7.19E-03	7.19E-03	9,097.35	0.02	0.17
		Annualized Emissions (CHA)	0.89	5.62	5.29	3.24	4.91	0.35	1.41	5.60E-04	0.09	0.09	109,168.22	0.21	2.06
35	Boiler 10	Highest Emitting Month	Dec-13	Jan-15	Jan-15	Jul-15	Dec-13	Jan-15	Dec-13	Dec-13	-	-	Aug-10	Aug-10	Aug-10
		Monthly Emissions	0.05	0.26	0.26	0.28	0.42	0.03	1.39	4.54E-05	7.48E-03	7.48E-03	9,469.05	0.02	0.18
		Annualized Emissions (CHA)	0.58	3.14	3.07	3.35	5.09	0.31	16.67	5.45E-04	0.09	0.09	113,628.58	0.21	2.14
102	SRU	Highest Emitting Month	Mar-15	Mar-15	Mar-15	Nov-14	Mar-15	Jan-14	Jan-14	Jan-14	-	-	May-11	May-11	May-11
		Monthly Emissions	0.01	0.05	0.05	2.33	0.69	0.03	0.47	2.79E-06	0.00	0.00	295.23	6.09E-03	6.09E-04
		Annualized Emissions (CHA)	0.14	0.58	0.58	27.98	8.23	0.37	5.62	3.34E-05	0.00	0.00	3,542.78	0.07	7.31E-03
103	Main Flare	Highest Emitting Month	Feb-15	Feb-15	Feb-15	Nov-13	Feb-15	Jun-15	Jan-13	Jan-13	Jan-10	-	Jan-10	Jan-10	Jan-10
		Monthly Emissions	0.57	0.68	0.68	2.26	1.43	10.89	13.23	3.41E-05	1.52	0.00	6,024.93	0.11	1.14
		Annualized Emissions (CHA)	6.83	8.11	8.11	25.00	17.20	130.71	158.82	4.09E-04	18.26	0.00	72,299.13	1.30	13.62
165	Tank 93	Highest Emitting Month	-	-	-	-	-	Jun-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.17	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	2.03	-	-	-	-	-	-	-
166	Tank 94	Highest Emitting Month	-	-	-	-	-	Dec-13	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.24	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	2.87	-	-	-	-	-	-	-
126	Tank 95	Highest Emitting Month	-	-	-	-	-	Jun-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.30	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	3.54	-	-	-	-	-	-	-
127	Tank 96	Highest Emitting Month	-	-	-	-	-	Mar-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.38	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	4.61	-	-	-	-	-	-	-
137	Tank 152	Highest Emitting Month	-	-	-	-	-	May-15	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.02	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	0.23	-	-	-	-	-	-	-
138	Tank 153	Highest Emitting Month	-	-	-	-	-	Apr-15	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.02	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	0.21	-	-	-	-	-	-	-
140	Tank 155	Highest Emitting Month	-	-	-	-	-	Mar-15	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.02	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	0.22	-	-	-	-	-	-	-
142	Tank 157	Highest Emitting Month	-	-	-	-	-	Mar-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.02	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	0.24	-	-	-	-	-	-	-
300	Tank 158 (Source ID 193)	Highest Emitting Month	-	-	-	-	-	Jun-15	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	2.33	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	28.01	-	-	-	-	-	-	-
143	Tank 159	Highest Emitting Month	-	-	-	-	-	Mar-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.34	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	4.06	-	-	-	-	-	-	-
194	Tank 160	Highest Emitting Month	-	-	-	-	-	Jan-15	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.02	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	0.26	-	-	-	-	-	-	-
144	Tank 161	Highest Emitting Month	-	-	-	-	-	Mar-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.52	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	6.21	-	-	-	-	-	-	-
145	Tank 162	Highest Emitting Month	-	-	-	-	-	Feb-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.53	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	6.36	-	-	-	-	-	-	-

Table C-32
Monroe Energy, LLC - Trainer, PA Refinery
Emissions Which Could Have Been Accomodated (CHA)

Emission Unit			Emission Rate (tpy)												
			PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	VOC	CO	Lead	H_2S	TRS	CO_2	N_2O	CH_4
146	Tank 163	Highest Emitting Month	-	-	-	-	-	Jun-15	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.38	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	4.57	-	-	-	-	-	-	-
147	Tank 164	Highest Emitting Month	-	-	-	-	-	Feb-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.65	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	7.79	-	-	-	-	-	-	-
148	Tank 165	Highest Emitting Month	-	-	-	-	-	Feb-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	1.69	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	20.33	-	-	-	-	-	-	-
149	Tank 166	Highest Emitting Month	-	-	-	-	-	Jun-15	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.41	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	4.91	-	-	-	-	-	-	-
150	Tank 168	Highest Emitting Month	-	-	-	-	-	Apr-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.02	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	0.24	-	-	-	-	-	-	-
152	Tank 170	Highest Emitting Month	-	-	-	-	-	Jul-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.51	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	6.16	-	-	-	-	-	-	-
155	Tank 174	Highest Emitting Month	-	-	-	-	-	Jul-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	1.15	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	13.79	-	-	-	-	-	-	-
156	Tank 175	Highest Emitting Month	-	-	-	-	-	Jun-15	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	1.05	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	12.61	-	-	-	-	-	-	-
157	Tank 178	Highest Emitting Month	-	-	-	-	-	Feb-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.49	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	5.85	-	-	-	-	-	-	-
160	Tank 181	Highest Emitting Month	-	-	-	-	-	Feb-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	1.85	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	22.24	-	-	-	-	-	-	-
161	Tank 182	Highest Emitting Month	-	-	-	-	-	Feb-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	3.29	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	39.43	-	-	-	-	-	-	-
163	Tank 185	Highest Emitting Month	-	-	-	-	-	Jun-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.98	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	11.81	-	-	-	-	-	-	-
164	Tank 186	Highest Emitting Month	-	-	-	-	-	Sep-14	-	-	-	-	-	-	-
		Monthly Emissions	-	-	-	-	-	0.55	-	-	-	-	-	-	-
		Annualized Emissions (CHA)	-	-	-	-	-	6.60	-	-	-	-	-	-	-
Total Capable of Accommodating Emissions			**53.48**	**65.85**	**65.45**	**110.09**	**485.22**	**381.04**	**508.31**	**0.00**	**19.03**	**0.77**	**1,211,292**	**11.08**	**64.23**
Baseline Period			**Aug-13 Jul-15**	**Aug-13 Jul-15**	**Aug-13 Jul-15**	**Aug-13 Jul-15**	**Aug-13 Jul-15**	**Aug-13 Jul-15**	**Jan-13 Dec-14**	**Nov-12 Oct-14**	**Jan-09 Dec-10**	**Apr-09 Mar-11**	**Jun-09 May-11**	**Jun-09 May-11**	**Jun-09 May-11**

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
101	FCC Unit	PM	84.62	43.06	41.56	93.30	50.24	0.00
		PM_{10}	110.60	63.93	46.66	140.78	76.84	0.00
		$PM_{2.5}$	96.21	56.61	39.60	120.81	64.20	0.00
		SO_2	88.82	46.18	42.64	96.67	50.49	0.00
		NO_X	432.52	297.01	135.51	454.41	157.40	0.00
		VOC	3.20	3.18	0.02	3.26	0.08	0.00
		CO	16.35	15.63	0.71	35.45	19.82	0.00
		Lead	-	2.47E-04	-	4.18E-04	1.71E-04	-
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	-	-	-	0.00	-	-
		TRS	-	-	-	0.00	-	-
		CO_2	754,773.34	499,375.51	255,397.83	560,274.64	60,899.13	194,498.70
		N_2O	4.42	2.93	1.50	3.28	0.36	1.14
		CH_4	22.11	14.67	7.44	16.46	1.79	5.65
733	FCCU Feed Heater	PM	0.18	0.10	0.08	0.38	0.28	0.00
		PM_{10}	0.72	0.42	0.30	1.52	1.10	0.00
		$PM_{2.5}$	0.72	0.42	0.30	1.52	1.10	0.00
		SO_2	0.78	0.44	0.34	1.66	1.22	0.00
		NO_X	3.02	1.76	1.26	6.44	4.67	0.00
		VOC	0.52	0.30	0.22	1.10	0.80	0.00
		CO	7.93	0.93	7.00	11.29	10.36	0.00
		Lead	4.72E-05	3.73E-05	9.89E-06	9.99E-05	6.26E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	8.56E-03	0.01	0.00	0.02	8.85E-03	0.00
		TRS	8.56E-03	0.01	0.00	0.02	0.01	0.00
		CO_2	13,103.51	16,695.75	0.00	34,001.33	17,305.58	0.00
		N_2O	0.13	0.17	0.00	0.35	0.18	0.00
		CH_4	0.67	0.85	0.00	1.73	0.88	0.00
735	Kerosene/HCN HTU Feed Heater	PM	0.06	0.22	0.00	0.47	0.25	0.00
		PM_{10}	0.25	0.36	0.00	0.50	0.15	0.00
		$PM_{2.5}$	0.25	0.36	0.00	0.50	0.15	0.00
		SO_2	0.28	0.39	0.00	0.55	0.16	0.00
		NO_X	4.51	6.41	0.00	9.20	2.79	0.00
		VOC	0.18	0.26	0.00	0.36	0.11	0.00
		CO	2.81	3.23	0.00	5.23	2.00	0.00
		Lead	1.67E-05	1.82E-05	0.00	2.85E-05	1.03E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	3.09E-03	2.74E-03	3.54E-04	3.74E-03	1.00E-03	0.00
		TRS	3.09E-03	2.77E-03	3.22E-04	4.36E-03	1.59E-03	0.00
		CO_2	4,728.66	4,319.92	408.74	6,671.34	2,351.42	0.00
		N_2O	0.05	0.04	4.16E-03	0.07	0.02	0.00
		CH_4	0.24	0.22	0.02	0.34	0.12	0.00
736	Diesel HTU Heater	PM	0.11	0.24	0.00	0.63	0.39	0.00
		PM_{10}	0.62	0.42	0.19	0.68	0.26	0.00
		$PM_{2.5}$	0.62	0.42	0.19	0.68	0.26	0.00
		SO_2	0.67	0.49	0.18	0.81	0.31	0.00
		NO_X	13.84	10.39	3.45	16.45	6.07	0.00
		VOC	0.39	0.06	0.34	0.39	0.33	7.36E-03
		CO	0.18	3.49	0.00	10.87	7.38	0.00
		Lead	4.05E-05	3.35E-05	6.98E-06	6.47E-05	3.12E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	7.45E-03	9.06E-03	0.00	0.01	2.93E-03	0.00
		TRS	7.45E-03	9.24E-03	0.00	0.01	2.75E-03	0.00
		CO_2	11,394.36	13,802.45	0.00	18,354.99	4,552.54	0.00
		N_2O	0.12	0.14	0.00	0.19	0.05	0.00
		CH_4	0.58	0.70	0.00	0.93	0.23	0.00
741	D2/VGO Hydrotreater Feed Heater	PM	0.15	0.43	0.00	0.79	0.36	0.00
		PM_{10}	0.59	0.33	0.26	1.14	0.81	0.00
		$PM_{2.5}$	0.59	0.33	0.26	1.14	0.81	0.00
		SO_2	0.61	0.64	0.00	1.20	0.56	0.00
		NO_X	7.71	8.01	0.00	15.06	7.05	0.00
		VOC	0.42	0.44	0.00	0.83	0.39	0.00
		CO	6.48	7.44	0.00	15.41	7.97	0.00
		Lead	3.86E-05	4.78E-05	0.00	9.17E-05	4.39E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	6.70E-03	0.01	0.00	0.02	4.27E-03	0.00
		TRS	6.70E-03	0.01	0.00	0.02	7.79E-03	0.00
		CO_2	10,254.92	23,209.06	0.00	34,559.53	11,350.47	0.00
		N_2O	0.10	0.24	0.00	0.35	0.12	0.00
		CH_4	0.52	1.18	0.00	1.76	0.58	0.00

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
737	Naphtha HDS Heater	PM	0.61	1.19	0.00	2.37	1.18	0.00
		PM_{10}	2.43	1.87	0.56	2.37	0.50	0.06
		$PM_{2.5}$	2.43	1.87	0.56	2.37	0.50	0.06
		SO_2	2.55	1.96	0.59	2.49	0.53	0.06
		NO_X	33.29	26.07	7.22	37.04	10.97	0.00
		VOC	1.76	1.35	0.41	1.72	0.36	0.04
		CO	26.88	20.86	6.01	26.25	5.38	0.63
		Lead	1.60E-04	1.22E-04	3.83E-05	1.56E-04	3.45E-05	3.75E-06
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.03	0.02	6.14E-03	0.03	6.98E-03	0.00
		TRS	0.03	0.02	6.68E-03	0.03	7.52E-03	0.00
		CO_2	43,298.56	33,037.72	10,260.84	44,576.75	11,539.03	0.00
		N_2O	0.44	0.34	0.10	0.45	0.12	0.00
		CH_4	2.20	1.68	0.52	2.27	0.59	0.00
738	Platformer Feed Heater	PM	4.06	8.45	0.00	15.12	6.67	0.00
		PM_{10}	16.23	13.44	2.79	15.46	2.01	0.78
		$PM_{2.5}$	16.23	13.44	2.79	15.46	2.01	0.78
		SO_2	17.03	14.10	2.92	16.21	2.11	0.81
		NO_X	185.70	147.14	38.57	174.17	27.04	11.53
		VOC	11.75	9.73	2.02	11.19	1.46	0.56
		CO	0.15	1.57	0.00	7.11	5.54	0.00
		Lead	1.07E-03	9.42E-04	1.26E-04	1.10E-03	1.61E-04	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.18	0.19	0.00	0.21	0.02	0.00
		TRS	0.18	0.19	0.00	0.21	0.02	0.00
		CO_2	280,870.92	284,157.46	0.00	319,415.38	35,257.92	0.00
		N_2O	2.86	2.89	0.00	3.25	0.36	0.00
		CH_4	14.28	14.45	0.00	16.24	1.79	0.00
739	Isocracker 1st Stage Heater	PM	0.26	0.55	0.00	1.07	0.52	0.00
		PM_{10}	1.03	0.96	0.07	1.39	0.43	0.00
		$PM_{2.5}$	1.03	0.96	0.07	1.39	0.43	0.00
		SO_2	1.08	1.01	0.07	1.46	0.45	0.00
		NO_X	16.77	15.65	1.12	21.75	6.10	0.00
		VOC	0.75	0.70	0.05	1.01	0.31	0.00
		CO	11.43	11.21	0.22	16.45	5.24	0.00
		Lead	6.80E-05	6.49E-05	3.08E-06	9.76E-05	3.27E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.01	9.24E-03	3.04E-03	0.02	5.95E-03	0.00
		TRS	0.01	9.38E-03	2.90E-03	0.02	5.81E-03	0.00
		CO_2	18,800.69	14,711.55	4,089.14	23,249.17	8,537.61	0.00
		N_2O	0.19	0.15	0.04	0.24	0.09	0.00
		CH_4	0.96	0.75	0.21	1.18	0.43	0.00
740	Isocracker Splitter Reboiler	PM	0.34	0.69	0.00	1.50	0.81	0.00
		PM_{10}	1.37	1.19	0.18	1.50	0.31	0.00
		$PM_{2.5}$	1.37	1.19	0.18	1.50	0.31	0.00
		SO_2	1.44	1.25	0.19	1.58	0.32	0.00
		NO_X	18.05	15.70	2.36	19.76	4.07	0.00
		VOC	0.99	0.86	0.13	1.09	0.22	0.00
		CO	15.17	13.38	1.78	17.58	4.19	0.00
		Lead	9.03E-05	7.83E-05	1.20E-05	1.05E-04	2.64E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.02	0.01	5.29E-03	0.02	4.02E-03	1.27E-03
		TRS	0.02	0.01	4.70E-03	0.02	3.90E-03	8.04E-04
		CO_2	25,067.59	18,382.52	6,685.07	23,836.53	5,454.01	1,231.06
		N_2O	0.25	0.19	0.07	0.24	0.06	0.01
		CH_4	1.27	0.93	0.34	1.21	0.28	0.06
742	VCD 541 VAC Heater	PM	0.27	0.18	0.09	0.29	0.12	0.00
		PM_{10}	1.06	0.71	0.36	1.17	0.46	0.00
		$PM_{2.5}$	1.06	0.71	0.36	1.17	0.46	0.00
		SO_2	1.16	0.77	0.39	1.28	0.50	0.00
		NO_X	20.50	13.38	7.12	21.87	8.49	0.00
		VOC	0.77	0.51	0.26	0.85	0.33	0.00
		CO	11.76	7.34	4.41	11.34	4.00	0.41
		Lead	7.00E-05	4.31E-05	2.69E-05	6.75E-05	2.45E-05	2.46E-06
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.01	9.43E-03	3.97E-03	0.01	2.88E-03	1.10E-03
		TRS	0.01	9.09E-03	4.31E-03	0.01	2.57E-03	1.74E-03
		CO_2	20,509.84	13,793.59	6,716.25	17,844.39	4,050.79	2,665.46
		N_2O	0.21	0.14	0.07	0.18	0.04	0.03
		CH_4	1.04	0.70	0.34	0.91	0.21	0.14

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
743	VCD 542 VAC Heater	PM	0.15	0.44	0.00	1.32	0.88	0.00
		PM_{10}	0.62	0.78	0.00	1.32	0.53	0.00
		$PM_{2.5}$	0.62	0.78	0.00	1.32	0.53	0.00
		SO_2	0.67	0.44	0.24	0.76	0.32	0.00
		NO_X	6.75	4.48	2.27	7.52	3.04	0.00
		VOC	0.03	0.02	9.65E-03	0.03	0.01	0.00
		CO	0.02	0.01	8.67E-03	0.02	0.01	0.00
		Lead	4.06E-05	2.38E-05	1.68E-05	4.60E-05	2.22E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	7.45E-03	0.01	0.00	0.01	2.44E-03	0.00
		TRS	7.45E-03	0.01	0.00	0.01	1.78E-03	0.00
		CO_2	11,394.36	17,771.31	0.00	20,631.05	2,859.74	0.00
		N_2O	0.12	0.18	0.00	0.21	0.03	0.00
		CH_4	0.58	0.90	0.00	1.05	0.15	0.00
746	VCD 544 VAC Heater	PM	0.55	1.35	0.00	3.20	1.85	0.00
		PM_{10}	2.19	2.88	0.00	3.36	0.48	0.00
		$PM_{2.5}$	2.19	2.88	0.00	3.36	0.48	0.00
		SO_2	2.39	2.37	0.02	2.88	0.52	0.00
		NO_X	12.44	12.53	0.00	14.63	2.10	0.00
		VOC	2.18	2.19	0.00	2.56	0.37	0.00
		CO	5.29	1.34	3.95	5.41	4.07	0.00
		Lead	1.44E-04	1.40E-04	4.35E-06	1.74E-04	3.41E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.03	0.02	2.82E-03	0.03	6.33E-03	0.00
		TRS	0.03	0.02	3.19E-03	0.03	6.71E-03	0.00
		CO_2	40,449.97	35,464.65	4,985.32	45,828.20	10,363.55	0.00
		N_2O	0.41	0.36	0.05	0.47	0.11	0.00
		CH_4	2.06	1.80	0.25	2.33	0.53	0.00
744	ACD 543 Crude Heater	PM	2.01	4.32	0.00	8.66	4.35	0.00
		PM_{10}	8.02	7.22	0.80	8.76	1.54	0.00
		$PM_{2.5}$	8.02	7.22	0.80	8.76	1.54	0.00
		SO_2	8.77	7.89	0.87	9.57	1.68	0.00
		NO_X	45.55	28.30	17.25	49.71	21.41	0.00
		VOC	5.81	5.23	0.58	6.34	1.11	0.00
		CO	88.66	81.32	7.34	96.84	15.52	0.00
		Lead	5.28E-04	4.82E-04	4.59E-05	5.76E-04	9.45E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.10	0.09	3.83E-03	0.11	0.01	0.00
		TRS	0.10	0.09	3.21E-03	0.11	0.01	0.00
		CO_2	148,126.65	143,860.54	4,266.12	166,202.49	22,341.96	0.00
		N_2O	1.51	1.46	0.04	1.69	0.23	0.00
		CH_4	7.53	7.31	0.22	8.45	1.14	0.00
745	ACD 544 Crude Heater	PM	2.00	4.68	0.00	9.23	4.55	0.00
		PM_{10}	8.01	7.59	0.43	9.23	1.64	0.00
		$PM_{2.5}$	8.01	7.59	0.43	9.23	1.64	0.00
		SO_2	8.75	8.29	0.47	10.08	1.80	0.00
		NO_X	50.11	32.82	17.28	56.20	23.37	0.00
		VOC	5.80	5.49	0.31	6.68	1.19	0.00
		CO	88.55	83.63	4.93	102.01	18.38	0.00
		Lead	5.27E-04	4.91E-04	3.59E-05	6.07E-04	1.16E-04	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.10	0.09	3.40E-03	0.10	9.51E-03	0.00
		TRS	0.10	0.09	1.93E-03	0.10	8.04E-03	0.00
		CO_2	148,126.65	145,398.35	2,728.31	157,482.30	12,083.95	0.00
		N_2O	1.51	1.48	0.03	1.60	0.12	0.00
		CH_4	7.53	7.39	0.14	8.01	0.61	0.00
34	Boiler 9	PM	0.72	0.53	0.20	0.89	0.36	0.00
		PM_{10}	5.69	1.69	4.01	5.62	3.93	0.07
		$PM_{2.5}$	5.07	1.51	3.57	5.29	3.79	0.00
		SO_2	1.04	1.93	0.00	3.24	1.31	0.00
		NO_X	4.41	4.14	0.27	4.91	0.77	0.00
		VOC	0.31	0.11	0.20	0.35	0.25	0.00
		CO	1.34	1.17	0.17	1.41	0.25	0.00
		Lead	4.80E-04	4.51E-04	2.91E-05	5.60E-04	1.09E-04	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.09	0.06	0.03	0.09	0.03	1.70E-03
		TRS	0.09	0.06	0.03	0.09	0.03	1.70E-03
		CO_2	115,228.12	72,880.82	42,347.30	109,168.22	36,287.41	6,059.89
		N_2O	2.11	0.14	1.98	0.21	0.07	1.91
		CH_4	2.21	1.37	0.83	2.06	0.68	0.15

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
35	Boiler 10	PM	0.40	0.38	0.02	0.58	0.20	0.00
		PM_{10}	3.07	1.06	2.01	3.14	2.08	0.00
		$PM_{2.5}$	2.97	1.01	1.97	3.07	2.06	0.00
		SO_2	2.97	1.91	1.06	3.35	1.44	0.00
		NO_X	3.93	3.89	0.04	5.09	1.20	0.00
		VOC	0.27	0.10	0.17	0.31	0.22	0.00
		CO	4.93	8.72	0.00	16.67	7.94	0.00
		Lead	4.60E-04	4.32E-04	2.76E-05	5.45E-04	1.13E-04	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.08	0.06	0.02	0.09	0.03	0.00
		TRS	0.08	0.06	0.02	0.09	0.02	0.00
		CO_2	110,341.81	83,481.92	26,859.89	113,628.58	30,146.66	0.00
		N_2O	2.02	0.16	1.87	0.21	0.06	1.81
		CH_4	2.11	1.57	0.54	2.14	0.57	0.00
102	SRU	PM	0.11	0.10	0.01	0.14	0.05	0.00
		PM_{10}	0.44	0.38	0.07	0.58	0.20	0.00
		$PM_{2.5}$	0.44	0.38	0.07	0.58	0.20	0.00
		SO_2	40.33	19.27	21.06	27.98	8.70	12.36
		NO_X	5.83	5.22	0.62	8.23	3.02	0.00
		VOC	0.32	0.24	0.08	0.37	0.13	0.00
		CO	4.90	3.56	1.34	5.62	2.05	0.00
		Lead	2.92E-05	2.04E-05	8.78E-06	3.34E-05	1.30E-05	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	0.00	0.00	0.00	0.00	0.00	0.00
		TRS	-	-	-	0.00	-	-
		CO_2	29,513.46	2,852.70	26,660.76	3,542.78	690.08	25,970.68
		N_2O	0.30	0.06	0.24	0.07	0.01	0.22
		CH_4	89.09	5.88E-03	89.08	7.31E-03	1.42E-03	89.08
103	Main Flare	PM	1.25	4.05	0.00	6.83	2.78	0.00
		PM_{10}	1.74	5.04	0.00	8.11	3.07	0.00
		$PM_{2.5}$	1.74	5.04	0.00	8.11	3.07	0.00
		SO_2	4.15	10.04	0.00	25.00	14.96	0.00
		NO_X	3.15	10.19	0.00	17.20	7.00	0.00
		VOC	6.48	33.12	0.00	130.71	97.59	0.00
		CO	17.13	58.11	0.00	158.82	100.71	0.00
		Lead	2.14E-04	1.14E-04	9.96E-05	4.09E-04	2.95E-04	0.00
		Fluorides	0.00	0.00	0.00	0.00	0.00	0.00
		H_2SO_4	0.00	0.00	0.00	0.00	0.00	0.00
		H_2S	2.47	14.23	0.00	18.26	4.03	0.00
		TRS	-	-	-	0.00	-	-
		CO_2	5,902.69	51,382.53	0.00	72,299.13	20,916.60	0.00
		N_2O	0.06	0.96	0.00	1.30	0.34	0.00
		CH_4	17.82	8.75	9.07	13.62	4.87	4.19
165	Tank 93	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	1.92	2.46	0.00	2.03	-4.30E-01	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
166	Tank 94	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	2.76	1.61	1.15	2.87	1.26	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
126	Tank 95	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	3.46	2.13	1.33	3.54	1.42	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
127	Tank 96	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	4.45	3.27	1.19	4.61	1.34	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
137	Tank 152	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	5.06	1.38	3.68	0.23	-1.15E+00	4.83
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
138	Tank 153	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	0.19	0.15	0.03	0.21	0.06	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
140	Tank 155	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	0.18	0.13	0.05	0.22	0.09	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
142	Tank 157	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	0.21	0.15	0.06	0.24	0.09	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
300	Tank 158 (Source ID 193)	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	13.15	3.50	9.66	28.01	24.51	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
143	Tank 159	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	3.97	3.32	0.65	4.06	0.74	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
194	Tank 160	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	0.22	4.86	0.00	0.26	-4.61E+00	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
144	Tank 161	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	6.04	2.70	3.34	6.21	3.51	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
145	Tank 162	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	3.25	0.87	2.39	6.36	5.49	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
146	Tank 163	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	4.25	1.60	2.64	4.57	2.97	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
147	Tank 164	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	3.79	2.53	1.26	7.79	5.26	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
148	Tank 165	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	8.26	3.09	5.17	20.33	17.24	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
149	Tank 166	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	3.55	2.16	1.40	4.91	2.75	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
150	Tank 168	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	2.89	1.53	1.36	0.24	-1.29E+00	2.65
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
152	Tank 170	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	6.13	3.02	3.11	6.16	3.15	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
155	Tank 174	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	12.01	4.09	7.92	13.79	9.70	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
156	Tank 175	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	7.43	5.35	2.07	12.61	7.25	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
157	Tank 178	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	3.23	4.53	0.00	5.85	1.32	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-

Table C-33
Monroe Energy, LLC - Trainer, PA Refinery
Project Emission Increases Summary

Source		Pollutant	Projected Actual Emissions (PAE)	Baseline Actual Emissions (BAE)	Emission Increases (PAE - BAE)	Emissions Which Could Have Been Accomodated (CHA)	Excludable Emissions (CHA - BAE)	Total Project Emission Increases (PAE - Excludable BAE)
			tons/yr					
160	Tank 181	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	8.75	3.03	5.72	22.24	19.21	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
161	Tank 182	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	20.53	6.52	14.01	39.43	32.91	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
163	Tank 185	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	11.26	7.02	4.23	11.81	4.78	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-
164	Tank 186	PM	-	-	-	-	-	-
		PM_{10}	-	-	-	-	-	-
		$PM_{2.5}$	-	-	-	-	-	-
		SO_2	-	-	-	-	-	-
		NO_X	-	-	-	-	-	-
		VOC	5.47	4.75	0.72	6.60	1.85	0.00
		CO	-	-	-	-	-	-
		Lead	-	-	-	-	-	-
		Fluorides	-	-	-	-	-	-
		H_2SO_4	-	-	-	-	-	-
		H_2S	-	-	-	-	-	-
		TRS	-	-	-	-	-	-
		CO_2	-	-	-	-	-	-
		N_2O	-	-	-	-	-	-
		CH_4	-	-	-	-	-	-

Table C-34
Monroe Energy, LLC - Trainer, PA Refinery
PSD Applicability Assessment Summary

Emission Unit		Project Related Emissions Increase (tpy)										
		PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	VOC	CO	Lead	H_2S	TRS	CO_2e[a],[b]
101	FCC Unit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	194,979.46
733	FCCU Feed Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
735	Kerosene/HCN HTU Feed Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
736	Diesel HTU Heater	0.00	0.00	0.00	0.00	0.00	7.36E-03	0.00	0.00	0.00	0.00	0.00
741	D2/VGO Hydrotreater Feed Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
737	Naphtha HDS Heater	0.00	0.06	0.06	0.06	0.00	0.04	0.63	3.75E-06	0.00	0.00	0.00
738	Platformer Feed Heater	0.00	0.78	0.78	0.81	11.53	0.56	0.00	0.00	0.00	0.00	0.00
739	Isocracker 1st Stage Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	Isocracker Splitter Reboiler	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27E-03	8.04E-04	1,236.35
742	VCD 541 VAC Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.41	2.46E-06	1.10E-03	1.74E-03	2,676.92
743	VCD 542 VAC Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
746	VCD 544 VAC Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
744	ACD 543 Crude Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
745	ACD 544 Crude Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	Boiler 9	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	1.70E-03	1.70E-03	6,631.89
35	Boiler 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	539.02
102	SRU	0.00	0.00	0.00	12.36	0.00	0.00	0.00	0.00	0.00	-	28,263.81
103	Main Flare	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	104.87
165	Tank 93	-	-	-	-	-	0.00	-	-	-	-	-
166	Tank 94	-	-	-	-	-	0.00	-	-	-	-	-
126	Tank 95	-	-	-	-	-	0.00	-	-	-	-	-
127	Tank 96	-	-	-	-	-	0.00	-	-	-	-	-
137	Tank 152	-	-	-	-	-	4.83	-	-	-	-	-
138	Tank 153	-	-	-	-	-	0.00	-	-	-	-	-
140	Tank 155	-	-	-	-	-	0.00	-	-	-	-	-
142	Tank 157	-	-	-	-	-	0.00	-	-	-	-	-
300	Tank 158 (Source ID 193)	-	-	-	-	-	0.00	-	-	-	-	-
143	Tank 159	-	-	-	-	-	0.00	-	-	-	-	-
194	Tank 160	-	-	-	-	-	0.00	-	-	-	-	-
144	Tank 161	-	-	-	-	-	0.00	-	-	-	-	-
145	Tank 162	-	-	-	-	-	0.00	-	-	-	-	-
146	Tank 163	-	-	-	-	-	0.00	-	-	-	-	-
147	Tank 164	-	-	-	-	-	0.00	-	-	-	-	-
148	Tank 165	-	-	-	-	-	0.00	-	-	-	-	-
149	Tank 166	-	-	-	-	-	0.00	-	-	-	-	-
150	Tank 168	-	-	-	-	-	2.65	-	-	-	-	-
152	Tank 170	-	-	-	-	-	0.00	-	-	-	-	-
155	Tank 174	-	-	-	-	-	0.00	-	-	-	-	-
156	Tank 175	-	-	-	-	-	0.00	-	-	-	-	-
157	Tank 178	-	-	-	-	-	0.00	-	-	-	-	-
160	Tank 181	-	-	-	-	-	0.00	-	-	-	-	-
161	Tank 182	-	-	-	-	-	0.00	-	-	-	-	-
163	Tank 185	-	-	-	-	-	0.00	-	-	-	-	-
164	Tank 186	-	-	-	-	-	0.00	-	-	-	-	-
N/A	New Feed Heaters	3.15	3.15	3.15	4.42	22.04	3.15	17.08	2.66E-04	-	-	81,935.43
N/A	New Cooling Tower	0.16	0.16	0.16	-	-	6.02	-	-	-	-	-
N/A	Additional Fugitive Emissions	-	-	-	-	-	5.13	-	-	-	-	-
Total Project Emissions Increases		***3.31***	***4.21***	***4.14***	***17.65***	***33.57***	***22.38***	***18.12***	***2.73E-04***	***4.06E-03***	***4.25E-03***	***316,367.75***
PSD Significance Threshold		**25**	**15**	**10**	**40**	**40**	**40**	**100**	**0.6**	**10**	**10**	**75,000**
PSD Significant?		***No***	***No***	***No***	***No***	***No***	***No***	***No***	***No***	***No***	***No***	***No***

[a] CO_2e is carbon dioxide equivalent, calculated according to 40 CFR 98 Equation A-1:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i$$

where GHGi = annual mass emissions of greenhouse gas i (short tons/year)
GWPi = global warming potential of greenhouse gas i from the table below

Pollutant	GWP (100 year)
CO_2	1
N_2O	298
CH_4	25

[b] A June 23, 2014 decision by the U.S. Supreme Court, in *Utility Air Regulatory Group v. EPA* , rules that PSD for greenhouse gas (GHG) emissions need only be considered when permitting already triggers PSD permitting for one of the convention PSD pollutants.

Table C-35
Monroe Energy, LLC - Trainer, PA Refinery
NNSR Applicability Assessment Summary

Emission Unit		Project Related Emissions Increase (tpy)				
		$PM_{2.5}$ NNSR			Ozone NNSR	
		$PM_{2.5}$	SO_2	NO_X	NO_X	VOC
101	FCC Unit	0.00	0.00	0.00	0.00	0.00
733	FCCU Feed Heater	0.00	0.00	0.00	0.00	0.00
735	Kerosene/HCN HTU Feed Heater	0.00	0.00	0.00	0.00	0.00
736	Diesel HTU Heater	0.00	0.00	0.00	0.00	0.01
741	D2/VGO Hydrotreater Feed Heater	0.00	0.00	0.00	0.00	0.00
737	Naphtha HDS Heater	0.06	0.06	0.00	0.00	0.04
738	Platformer Feed Heater	0.78	0.81	11.53	11.53	0.56
739	Isocracker 1st Stage Heater	0.00	0.00	0.00	0.00	0.00
740	Isocracker Splitter Reboiler	0.00	0.00	0.00	0.00	0.00
742	VCD 541 VAC Heater	0.00	0.00	0.00	0.00	0.00
743	VCD 542 VAC Heater	0.00	0.00	0.00	0.00	0.00
746	VCD 544 VAC Heater	0.00	0.00	0.00	0.00	0.00
744	ACD 543 Crude Heater	0.00	0.00	0.00	0.00	0.00
745	ACD 544 Crude Heater	0.00	0.00	0.00	0.00	0.00
34	Boiler 9	0.00	0.00	0.00	0.00	0.00
35	Boiler 10	0.00	0.00	0.00	0.00	0.00
102	SRU	0.00	12.36	0.00	0.00	0.00
103	Main Flare	0.00	0.00	0.00	0.00	0.00
165	Tank 93	-	-	-	-	0.00
166	Tank 94	-	-	-	-	0.00
126	Tank 95	-	-	-	-	0.00
127	Tank 96	-	-	-	-	0.00
137	Tank 152	-	-	-	-	4.83
138	Tank 153	-	-	-	-	0.00
140	Tank 155	-	-	-	-	0.00
142	Tank 157	-	-	-	-	0.00
300	Tank 158 (Source ID 193)	-	-	-	-	0.00
143	Tank 159	-	-	-	-	0.00
194	Tank 160	-	-	-	-	0.00
144	Tank 161	-	-	-	-	0.00
145	Tank 162	-	-	-	-	0.00
146	Tank 163	-	-	-	-	0.00
147	Tank 164	-	-	-	-	0.00
148	Tank 165	-	-	-	-	0.00
149	Tank 166	-	-	-	-	0.00
150	Tank 168	-	-	-	-	2.65
152	Tank 170	-	-	-	-	0.00
155	Tank 174	-	-	-	-	0.00
156	Tank 175	-	-	-	-	0.00
157	Tank 178	-	-	-	-	0.00
160	Tank 181	-	-	-	-	0.00
161	Tank 182	-	-	-	-	0.00
163	Tank 185	-	-	-	-	0.00
164	Tank 186	-	-	-	-	0.00
N/A	New Feed Heaters	3.15	4.42	22.04	22.04	3.15
N/A	New Cooling Tower	0.16	-	-	-	6.02
N/A	Additional Fugitive Emissions	-	-	-	-	5.13
Total Project Emissions Increases		***4.14***	***17.65***	***33.57***	***33.57***	***22.38***
NNSR Significance Threshold		***10***	***40***	***40***	***25***	***25***
NNSR Significant?		***No***	***No***	***No***	***Yes***	***No***

Table C-36
Monroe Energy, LLC - Trainer, PA Refinery
Contemporaneous Emission Increases/Decreases

Date[a]	Plan Approval/ RFD	Description	Note	Emission Increase/Decrease	
				NO_X	VOC
				(tpy)	
10/03/2006	23-0003I	Two New Boilers		23.70	2.60
05/04/2007	23-0003J	Clean Fuel Project	(b)	39.00	0.00
10/19/2007	23-0003K	Modification to PA 23-0003G		21.89	0.00
10/23/2008	23-0003M	Cooling Tower		0.00	0.74
12/08/2008	23-0003N	FCCU Feed Heater Modification		0.00	(1.10)
02/09/2009	23-0003O	ReVAP	(c)		
04/10/2009	23-0003P	2010 Turnaround		1.59	0.26
09/28/2009	23-0003Q	Boiler MACT Phase II Application		0.00	0.00
12/04/2009	RFD	Light Components Loading		0.07	0.14
12/23/2009	23-0003R	Aromatic Saturation Unit Project	(c)		
10/01/2010	23-0003S	Flare Gas Recovery Project		0.00	3.58
10/01/2010	23-0003T	Amended Alky ReVAP Project	(c)		
11/09/2011	23-0003U	Two New Boilers (Replace Boiler 8)(withdrawn)			
04/12/2012	23-0003V	Diesel Heater Project	(c)		
08/09/2012	RFD	Main Flare - Turnaround		0.00	0.09
01/10/2013	RFD #3418	Propane Loading into Trucks		0.00	0.00
04/04/2013	RFD #3561	Peabody Heater Modifications		0.00	0.00
04/23/2013	RFD #3596	Max Jet		0.00	0.21
05/17/2013	23-0003W	D2 Project	(d)	0.00	3.44
03/13/2014	23-0003X	400 kW Emergency Generator	(e)	1.19	0.01
10/14/2014	23-0003Y	Proposed Boiler 13 (Replace Boiler 8)		11.70	1.98
Total Contemporaneous Emission Increases with Proposed Boiler 13				117.14	0.00
Total Contemporaneous Emission Reduction Credits Required			(f)	152.28	0.00
Total Emission Reduction Credits Previously Provided with PA 23-0003X			(g)	(146.20)	N/A
Net Emission Reduction Credits Required/Provided with PA 23-0003Y			(h)	6.08	0.00
TBD	23-0003Z	Proposed Cooling Tower Project	(i)	1.44	67.38
TBD	TBD	Proposed Flare PAA		1.60	0.09
TBD	TBD	Proposed ULSG PAA		33.57	22.38
5-year Aggregation				***36.62***	***22.47***
10-year Aggregation				***36.62***	***22.47***
Significance Level				***25***	***25***
Total Emission Reduction Credits Required [f]				***48***	***N/A***

Notes:

[a] Based on net emission increases occurring over a 10-year period.

[b] This application modified an existing Plan Approval No. 23-0003E.

[c] Application/Plan Approval was withdrawn.

[d] Project triggered NNSR for VOC, 40 tons of VOC ERCs were purchased, cumulative contemporaneous emissions increase reset back to zero.

[e] Project triggered NNSR for NO_X, 147.6 tons of NO_X ERCs were purchased, cumulative contemporaneous emissions increase reset back to zero with an additional 1.4 tons available for future use.

[f] At an offset ratio of 1.3:1 per 25 Pa. Code § 127.210.

[g] Application/Plan Approval 23-0003U was withdrawn and desired back-up capacity now being replaced with proposed Boiler 13. Aggregate NO_X ERCs required is reduced accordingly for those already provided under PA 23-0003X, per conversations with Virendra Trivedi (PADEP) on July 10, 2014.

[h] Project triggered NNSR for NO_X, 6.08 tons of NO_X ERCs were purchased, cumulative contemporaneous emission increase reset back to zero.

[i] Project triggered NNSR for VOC, 69.39 tons of VOC ERCs were purchased, cumulative contemporaneous emission increase reset back to zero.

ATTACHMENT D
MUNICIPAL NOTIFICATION LETTERS

Monroe Energy, LLC
4101 Post Road
Trainer, PA 19061
(610) 364-8000

September 1, 2015

CERTIFIED MAIL 7009 2820 0002 5399 2534

Principal Planner
Delaware County Planning Department
Court House/Government Center
201 W. Front Street
Media, PA 19063

RE: PADEP Required County Notification – Plan Approval Application

Dear Sir or Madam:

Pursuant to the Commonwealth of Pennsylvania's Administrative Code (Section 1905-A), Cooperation with Municipalities, which became effective April 17, 1984, Monroe Energy, LLC (Monroe) hereby notifies Delaware County of its submittal of a Plan Approval Application to Construct, Modify, or Reactivate an Air Contamination Source and/or Air Cleaning Device to the Pennsylvania Department of Environmental Protection (PADEP). Monroe operates a petroleum refinery located in Trainer, Pennsylvania (Trainer Refinery), and is submitting a Plan Approval Application for the installation of new sources needed to meet gasoline sulfur level requirements of the U.S. Environmental Protection Agency (U.S. EPA) Tier 3 Motor Vehicle Emission and Fuel Standards rule.

PADEP will accept comments on the Plan Approval Application during a 30-day period which begins upon your receipt of this notification. A copy of the Plan Approval Application is available for your review at PADEP's Southeast Regional Office in Norristown, Pennsylvania. Any comments concerning the application should be transmitted to PADEP within 30 days of your receipt of this letter. If you have any questions or concerns regarding the above information, please contact me at 610-364-8528 or david.chetkowski@monroe-energy.com.

Sincerely,
MONROE ENERGY, LLC

David M. Chetkowski, P.E.
Air Program Lead

USPS Tracking®

Tracking Number: 70092820000253992534

Delivered

On Time
Expected Delivery Day: Thursday, September 3, 2015

Product & Tracking Information

Postal Product:
First-Class Mail®

Features:
Certified Mail™ Return Receipt

See tracking for related item: 9590952106150173960222

DATE & TIME	STATUS OF ITEM	LOCATION
September 3, 2015 , 9:09 am	Delivered	MEDIA, PA 19063
	Your item was delivered at 9:09 am on September 3, 2015 in MEDIA, PA 19063.	
September 3, 2015 , 9:03 am	Out for Delivery	MEDIA, PA 19063
September 3, 2015 , 8:53 am	Sorting Complete	MEDIA, PA 19063
September 3, 2015 , 8:26 am	Arrived at Unit	MEDIA, PA 19063
September 2, 2015 , 8:29 pm	Departed USPS Facility	PHILADELPHIA, PA 19176
September 1, 2015 , 7:03 pm	Arrived at USPS Facility	PHILADELPHIA, PA 19176
September 1, 2015 , 3:10 pm	Departed Post Office	MARCUS HOOK, PA 19061
September 1, 2015 , 1:58 pm	Acceptance	MARCUS HOOK, PA 19061

Available Actions

Text Updates

Email Updates

Track Another Package

Tracking (or receipt) number

Track It

Manage Incoming Packages

Track all your packages from a dashboard. No tracking numbers necessary.

Sign up for My USPS ›

Monroe Energy, LLC
4101 Post Road
Trainer, PA 19061
(610) 364-8000

September 1, 2015

CERTIFIED MAIL 7009 2820 0002 5399 2527

VP Council and Public Safety
Trainer Borough
824 Main Street
Trainer, PA 19061

RE: PADEP Required Borough Notification – Plan Approval Application

Dear Sir or Madam:

Pursuant to the Commonwealth of Pennsylvania's Administrative Code (Section 1905-A), Cooperation with Municipalities, which became effective April 17, 1984, Monroe Energy, LLC (Monroe) hereby notifies Trainer Borough of its submittal of a Plan Approval Application to Construct, Modify, or Reactivate an Air Contamination Source and/or Air Cleaning Device to the Pennsylvania Department of Environmental Protection (PADEP). Monroe operates a petroleum refinery located in Trainer, Pennsylvania (Trainer Refinery), and is submitting a Plan Approval Application for the installation of new sources needed to meet gasoline sulfur level requirements of the U.S. Environmental Protection Agency (U.S. EPA) Tier 3 Motor Vehicle Emission and Fuel Standards rule.

PADEP will accept comments on the Plan Approval Application during a 30-day period which begins upon your receipt of this notification. A copy of the Plan Approval Application is available for your review at PADEP's Southeast Regional Office in Norristown, Pennsylvania. Any comments concerning the application should be transmitted to PADEP within 30 days of your receipt of this letter. If you have any questions or concerns regarding the above information, please contact me at 610-364-8528 or david.chetkowski@monroe-energy.com.

Sincerely,
Monroe Energy, LLC

David M. Chetkowski, P.E.
Air Program Lead

USPS Tracking®

Tracking Number: 70092820000253992527

Delivered

Updated Delivery Day: Wednesday, September 2, 2015

Product & Tracking Information

Postal Product:
First-Class Mail®

Features:
Certified Mail™ Return Receipt

See tracking for related item: 9590952106150173960239

DATE & TIME	STATUS OF ITEM	LOCATION
September 2, 2015 , 1:23 pm	Delivered	MARCUS HOOK, PA 19061
Your item was delivered at 1:23 pm on September 2, 2015 in MARCUS HOOK, PA 19061.		
September 2, 2015 , 6:37 am	Arrived at Unit	MARCUS HOOK, PA 19061
September 1, 2015 , 3:10 pm	Departed Post Office	MARCUS HOOK, PA 19061
September 1, 2015 , 2:00 pm	Acceptance	MARCUS HOOK, PA 19061

Available Actions

Text Updates

Email Updates

Track Another Package

Tracking (or receipt) number

Track It

Manage Incoming Packages

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ATTACHMENT E
ALL4 INC. QUALITY SEAL

Digitally signed by Kevin J. Hickey
DN: cn=Kevin J. Hickey, o=All4 Inc., ou, email=khickey@all4inc.com, c=US
Date: 2015.09.11 19:28:25 -04'00'